

Ancient Classics for English Readers

EDITED BY THE

REV. W. LUCAS COLLINS, M.A.

(*SUPPLEMENTARY SERIES.*)

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L U C R E T I U S

BY

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N O T E.

THE prose translations from Lucretius are taken in the main, with but very slight alterations, from the version of Mr Munro. The verse translations are my own.

W. H. M.

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L U C R E T I U S.

C H A P T E R I

INTRODUCTORY.

As we look back upon the works of the great writers of the past—works and writers with which, in a certain sense, we are quite familiar, and which in a certain sense are as famous now as ever—it will sometimes give us a strange, and almost painful shock, if we realise how very few of these can be still said to live. They have their immortality, it is true; but they have passed to it through the grave and gate of death. Their forms are still heroic; but they are heroes without blood, and shadowy; and we seem to meet them in a dim Elysium, not in the world around us. Or else we may compare them to bodies embalmed with spices, hidden away underground, and to be studied only at intervals, in the crypts of literature. A few, a few only, such as Horace and Shakespeare, still keep their fleshly life in them, are able to push their way towards us through the distractions and cares surrounding us, to parley

with these, and to show us how to meet them, and, standing close beside us, assail us with living voices.

Amongst this small minority Lucretius certainly can claim no place. When his own language was still living, when men in the extent of their knowledge and their ways of thought were still the same as he himself knew them, not even then does he seem to have been popular or influential. And men, since he knew them, have grown and changed. Knowledge has widened in ways he never dreamed of ; new tones have grown into human sentiment ; all the lights and shadows of life have shifted ; and its whole surface has been dyed with different colours. Naturally, we then—we of the modern world—as far as any direct influence goes, are quite beyond his reach. His voice is not as our voice ; it is of a different substance. We can make no direct response to it. At his note our minds and feelings rouse to no movement. It comes to us like a “horn of elf-land faintly blowing,” and we know that it was meant for other ears than ours.

But the case of Lucretius is in some ways a singular one ; and this very remoteness may give him, in these days, a sharp and vivid interest for us, that has long gone from poetry to which in many ways we are far nearer. How this is, we shall see readily when we consider the work he did. We shall see why he had as little interest as he had for his own epoch, and why he has as much as he has for ours. Of his life next to nothing is known for certain, beyond the fact that he was a Roman of probably noble family, that he died in the prime of his manhood, about half a century

before the birth of Christ, and that a legend ascribes his death to the effects of a maddening love-philtre. What his fame rests on, what makes his name known to us, is a single poem—or, speaking of it as a whole, it may be perhaps more just to say, a single treatise in verse. For the main subject of this poem is not poetical; nor, in composing it, was poetry the author's first object. Primarily, and before all things, the work is a scientific treatise—as strictly scientific (at least in the author's intention) as a modern treatise on optics, or geology, or the origin of species; and, except as far as metre goes, it has in many places as little of poetry as these have. Poetry, it is true, there is in it—poetry in abundance; and some of this is the loftiest in all Roman literature. Continually, too, when we do not get poetry, we are still conscious that we are listening to a poet. All this we shall come to see by-and-by. But it will be well first to consider the work only in its primary character, that of a book of science; for here is the foundation of its special interest for ourselves; and our interest in it, under its other aspects, is largely based on this.

Lucretius called his book '*An Essay on the Nature of Things*.' And he designed it to be a complete scientific explanation of the universe, and the relation of man to it, as a part of itself. He applies the same method to the investigation of mind and matter; of human and animal life; of organic and inorganic nature; and he describes the way in which the latter has risen out of the former. He traces the evolution of the present universe out of its original elements;

he tells us how the earth became fit gradually to sustain life on its surface; he explains the origin of the existing species of animals, man included, together with the nature of consciousness, and the grounds of knowledge. And, finally, he gives us a history of human progress and civilisation, from the rudest to the most advanced stages, explaining the origin of language, of the state, of law, and the development of the various arts. And he does not do this as a poet might have been expected to do it. This is the thing of all others that he most seeks to avoid. He wishes to deal in no broad effective generalities, no picturesque metaphor. He seeks to drown no homely details by devices of artistic chiaroscuro. He bids all poetic imagination, as a tempter, get behind him. One by one, with all the method he can master, he goes into the questions that are before him, confusing the matter with no ornamental metaphors. He is a strict utilitarian in his choice of language. He cares not how prosaic he is. His great aim is to explain facts, and to show convincingly that his explanations are the true ones.

Judged of as an exposition of what really is, the science of Lucretius is of course completely valueless. And yet there are two things about it which, for the present generation, must give it a peculiar interest. One of these things is that very valuelessness, that strange, grotesque difference to all our modern teaching. But such a difference by itself would not create an interest. There is a second point about it, just as noticeable as the first, and which, indeed, alone makes

the first worth noticing—and this is the strange likeness to our modern teaching that runs through all this difference. Couched under other forms, arrived at by other courses, the first principles of Lucretius, and many of his last conclusions, are the same, or are all but the same, as those which are now startling the world as new revelations—revelations so new and so startling that we can as yet only half accept them. In the first place, his mission and his attitude, to view the matter broadly, are entirely analogous to those of our modern physicists. He comes forward just as they do, as the champion of natural science, claiming that by it, and by it alone, we are to understand man's life, and to explain the universe. It is his doctrine, just as it is theirs, that no event can occur either in the outer world about us, or in the inner world of our own consciousness, that is not connected with some material change, and is not conceivably explicable in terms of matter. And he makes this claim for science, just as it is made now, against all theology, and against all religion. To these he ascribes, just as is done by some modern thinkers, a large part of the ills men suffer from. To a certain extent, too, he professes the belief, so often now held out to us, that when once religion, with its blighting influence, is exterminated, there are prospects of “a better, and, above all, a happier state of existence,” for the human race. Indeed, so like is much of his general language to what we hear continually in our own day, so inspired does it seem to be with just the same animus, that we might at times almost fancy he was Professor Tyndall, or one of the

two Mills, confuting the arguments of Paley or of Butler, or deriding the narratives of the book of Genesis.

But it is not in his general attitude only that he is so like the moderns. With less exactness, but in perhaps a far more singular manner, he seems to anticipate many of their most special individual doctrines. The evolution of the present universe, the indestructibility of matter, the struggle for existence, the survival of the fittest, the origin of language, of religion, of the state, of law, and the progress of society generally—on these, as well as on numerous other points, the teachings of Lucretius are in strange accordance with much of what we are being taught now. To us these things are being told as entirely fresh tidings,—as facts and theories that have now for the first time dawned on the human spirit. And to a certain extent there is a truth in this; but to a certain extent only. The same thoughts and the same theories were the property of Lucretius or of his teacher; and they have now come back to the world, not as different things, but as the same things changed.

Here is that double fact about Lucretius which gives him his special interest for us—the likeness of his thoughts to much of the thought now, and also the difference. When we study him, we are brought face to face with two combatants—science and theology. When we look about us now, we are brought face to face with two combatants also—science and theology. At first these two pairs seem so unlike each other, that we hardly class them together, or

make any comparison between them, or their modes of warfare? If we look at them a little longer, we shall see that they are the same; and then for the first time shall we fully realise their unlikeness, just as we first see fully what the years have done for a man's face, when we connect it with what it once was when a boy's. In the days of Lucretius, materialism and theism were each, as it were, in their boyhood; and, armed with simple weapons, they fought a boyish battle. If we look back a little on what they then were, it may help us better to realise what they now are,—how each has been changed by the knowledge of new perplexities—how each, armed now with weapons so far more formidable, and so far more skilful in the use of them, seems less confident of a final victory—how the faces of each have lost their old rash confidence, and are marked by deeper lines of thought and of anxiety.

In making this comparison, the form of Lucretius's work will itself be of some assistance to us. Were a similar work to be written in our time in a similar form, it might create much surprise, but could not command much attention; and even that of Lucretius, when first given to the world, seems, as has been already said, never to have been really popular. We may perhaps gain some notion of the general literary effect of it, if we conceive Mr Tennyson, instead of writing his "Arthurian Idylls," to have devoted his talents to versifying Mr Darwin's 'Origin of Species' and 'Descent of Man;' using the views of that philosopher as a text for a passionate invective against

Anglican orthodoxy and the doctrine of original sin, and a passionate protest that when we were once free of these superstitions, the complexion of our whole life would change, and human society become a nobler thing. In such a composition there could not fail to be passages of powerful and lofty poetry ; and touches of a poet's hand we should be sure to trace everywhere. But however clearly it might be the work of a poet, it would very certainly not be a successful poem. Our admiration for the author's power might be great ; but our regret for his waste of it would be greater. But as regards Lucretius, our feelings are somewhat different. The scientific system he undertook to expound was to comprise the whole circle of the sciences, and was to unravel the whole riddle of existence with a rapidity and completeness that no one now so much as dreams of. From a poet's standpoint, therefore, his subject, judged as a whole, possessed a sort of epic grandeur, that to him seemed compatible with the strictest scientific accuracy. At the same time, in its details, and in the sort of reasonings they were founded on and supported by, there was a simplicity that made them less unfit than we should imagine to be expressed in verse. In fact, the form in which Lucretius gave the world his system is itself singularly typical of how far ancient science is removed from ours, and is the liveliest illustration possible of the sort of gulf that is between them.

But the form that Lucretius gave his work is valuable and instructive for another reason than this. The poem has a secondary character, with which its form

is in more natural keeping, and of which it is a yet more special expression. Primarily, as has been said, Lucretius wrote as a man of science. To indoctrinate men with science, with accurate science, was his main object. But it was not with science for its own sake. It was for the sake of the effect it was to have upon their lives, upon their hopes, their joys, their practical conduct, their happiness. What this effect was to be, he seems to think in a large measure self-evident. At any rate it did not need the same elaborate exposition as the reasoning which led up to it. But still at the same time he is perpetually referring to it, perpetually calling the attention of his readers to it; showing them that it—it alone—is, though not the main subject of his work, at any rate the main object of it. What is man? why is he here? what hope has he in this world? what are the sources of his joys and sorrows? how shall he choose the first of these, and avoid the latter? what things are here worth living for? and, what worth is there in even the best of these? These are the ultimate questions that really concern men; and science has no general value, save as preparing our minds to meet them. And, as Lucretius views it, science gives us this preparation in one single way. Its work is to isolate life; to show us that life is self-centred, self-bounded, and, in so far as it is sufficient at all, self-sufficient. Till life is thus isolated, it is the earnest, the fierce belief of Lucretius, that we shall never have it at its best; it will be full of miseries and solicitudes which need not exist, but which we through our folly and headstrong ignorance

create ourselves, for our own torment. What manner of possession he regarded life when thus isolated, what happiness or pleasure he thought it would be able to yield us, is a question of equal interest for us as the character of his physical science, and suggests an equally significant comparison with the thought of our own time. Much of his views upon this point his poetical treatment of his subject will enable us to gather, though he has not reduced these opinions to a formal system; and the fact that he was a poet, and looked at life with a great poet's vision, will give to these opinions a special value and meaning.

In examining his work, then, though it is a work that no longer speaks directly to us, or can directly influence any of our ways of thinking, or impart to us any new fragment of knowledge, we shall be examining something that has more interest for us than belongs to a mere curious antiquity. We shall be examining a distant landmark, to which the atmosphere of our own day is giving a new distinctness, and which shows us how far in twenty centuries men's minds have travelled—travelled along two courses. One course is their explanation of life by natural or by supernatural theories; the other is their sentiments and their practical teaching with regard to life when explained.

Thus, in attempting to understand the work of Lucretius, our task will be simplified by dividing it into two parts. Let us first, therefore, without reference to the literary form he gave it, try to understand accurately his scientific system, his methods of obser-

vation and reasoning, and the conclusions, general and particular, that he arrived at. We shall thus see what the main message was that he wished to deliver to the world. Let us then go on to examine the poem itself, and see how, as a poet, he handled so refractory a subject; and how, in proclaiming and illustrating its relations to human life, and to human passion, he made it lead up to and suggest poetry. We shall so be brought to understand what his teaching was, and what he himself seemed to feel were the results of it. Then we may be led on to dwell briefly on the chief points of difference between him and us,—though in making such a comparison we must each of us do much for ourselves. And further, we may consider briefly—though this is the matter that will have least interest for us—the ‘Essay on the Nature of Things,’ not as science, not as philosophy, but simply as a literary production, as a poem, as a work of art in language, that is distinguished as such by certain technical defects and excellences.

What then we shall now begin with considering is the scientific system that Lucretius aims at expounding to us—what it was, and how he came to master it. To understand this, however, it will be necessary to go a little farther back in history, and try to realise as best we may the nature of the scientific systems that had gone before it, and that it at once grew out of and superseded.

CHAPTER II.

THE DAWN OF PHYSICAL SCIENCE.

“THE impregnable position of Science,” says one of our latest and most celebrated scientific teachers, “may be stated in a few words. We claim and we shall wrest from theology the entire domain of cosmological theory.” The earliest claim and the earliest aim of science was identical with this, its latest. The same words are true of it, in its birth and in its maturity.

The birth of science, using the word in the sense now popularly and specially attached to it, is not an event so vague as one might expect to find it. It is an event which, so far as we know, we can give with accuracy both a date and place to. In the Greek city of Miletus, about six hundred years before Christ, there flourished a certain thoughtful man named Thales. He it was who, so far as we know, was the first man of science. He caught the first distinct glimmer of a scientific conception of things, and revealed as best he could this new light to others. This event was a momentous one. The details of it are far remote: we have but few and scanty records of it. But let us do our best to realise what its nature was.

The race that Thales came of, and amongst whose ideas he was nurtured, was a race singularly keen, inquiring, intellectual, and imaginative. They felt, therefore, the wonder of the world, and the need for an explanation of it. But for a long time they were contented with a very simple answer. In one point, we must remember, they were very unlike ourselves. One of the ideas which weighs most heavily on the modern consciousness is the sense of our own separation from nature, often of our antagonism to it. But the Greeks, amongst whom natural science took its rise, were conscious of no such separation. They felt they were a part of nature, akin to it, in harmony with it. They were indeed themselves but one of nature's forces. Now, of many of nature's phenomena, they felt that they were themselves the causes and the controllers. But besides these, there were others which they could neither cause nor control. Here was their first problem: how should they explain these? The answer was obvious. These were the workings of beings like themselves, only indefinitely wiser and indefinitely more powerful. All the phenomena of nature they at once accounted for, so far as they realised that any account was required of them, by an anthropomorphic polytheism; or in other words, as Mr Matthew Arnold might express it, all that was done in the world, that was not done by ourselves, was done and conducted by a race of "magnified and non-natural men."

As, however, this system of theology became more definite, and more burdened with detail, it began to

jar at length upon finer and more reflecting minds. And such—Thales being the first of them—sought to find an escape from it in some simpler and more sedate conception. The first transition to this—the first beginning of the change from theology to science—is a very curious one. It took this form. Thales was discontented with the theory that represented all the changes and facts of the universe as due to the manipulation of a race of divine animals. It was a theory that was arbitrary, grotesque, and inharmonious. It needed to be simplified. Accordingly, discarding the divine animals altogether, he supposed the universe to be a divine animal itself, living, moving, breathing as men do, and as the gods were supposed to do. Thus one of the philosophers of the school of Thales taught that the stars were the world's breathing-holes. This conception seems strange and quaint to us now, but still it was a true step in the direction of science. And it did not end here. This theory was not allowed to remain as a mere abstract statement. Attempts were at once made to connect it with the observed facts of things. The material world, or in other words matter, being conceived of as itself alive, and as a single living thing, the variety of the shapes it took had to be conceived of as apparent only, not real—or, at any rate, all equally reducible to some common unity. Observation of facts supplied many cases that seemed to show that this was so. Vapours condensed themselves into water; ice melted into water; snow melted into water; and conversely water, or moisture, which seemed near akin to it, was absorbed

into plants and animals, and sustained their life. Life, again, was seen to depend on respiration ; and thus life and living beings seemed, from one point of view, to be a mode of air. Similarly, fire seemed to be possessed of a like protean power. Heat, fire's primary quality, was seen to be associated with life ; nearly every substance could be burnt, and reduced to fire ; and so all things, it was argued, had originally been composed out of it. Such were the natural observations of the first physicists,—one confining his attention to one set of phenomena, another to another, being guided in this choice by no assignable reason.

Thus one of them taught that everything was really water ; another that everything was really air ; another that everything was really fire ; another that everything was really some unqualified substance, that had the power of giving itself a number of contrary qualities.

These various speculators form together the first scientific school ; and in spite of their various differences, they agree in one fundamental point. They agree in substituting for an explanation of the universe that was complicated and unverifiable, one that was simple, and was at least in some degree capable of verification, and in some degree founded upon observation. They made the power of nature a single power, contained within herself, and immanent everywhere ; they taught that this power was material and accessible to observation, and they tried to analyse it into its simplest form.

Science remained in this stage for about a hundred

years—that is, thinkers for about that time treated matter as though it were endowed with life, and tried to explain the universe by ascribing to it the powers and the character of an animal. But all the while this school of thought bore within itself the seeds of change; and gradually and insensibly its exponents were carried beyond it. The conception of the world acting as an animal, insensibly died into, or got confused with, that of its acting under law as an automaton.

Thus Anaximander, who was born not thirty years after Thales, though basing his speculations, like Thales, on the supposed vitality of matter, still shows a tendency to rise out of this conception, or at least to merge it in another. He it was who taught that the real substance of all things was a vague uniform substance, living, but without qualities; but capable, by virtue of its life, of taking different qualities to different parts of itself. Thus, he teaches, the elementary contraries, warm and cold, moist and dry, were first separated. Up to this point he seems to have thought of matter as acting like a living thing. After this he seems to change his view of it, and to treat its movements as those of a blind and dead necessity. From the conflict of these contraries, he teaches, there arose an eternal motion, out of which the present universe gradually shaped itself, including men, and gods also, these last being thus the product of natural action, not the producers of it. The earth, he further teaches, was once fluid, and has been evolved slowly into its present state. Life at length was de-

veloped on its surface through the interaction of heat and moisture, and at first existed only in the water, which at a former epoch covered everything. Gradually much of these waters dried up, and a number of living creatures were left on land. These organisms slowly adapted themselves to their environments, and the land animals acquired their present form.

In these doctrines we see certainly the germ at least of a more advanced conception of things. The first scientific conception has already given birth to a new and antagonistic one. A little later on this antagonism becomes yet more marked; and it grows quite plain that this early school of science is divided against itself.

We see this very clearly in the cases of Heracleitus* and Empedocles. Both of these still look for the first cause of things as they are, in a certain living will, in a certain personal character that inheres in matter. It is this that in the first place sets things in motion; but when once the motion has begun, they seek to explain the direction of it by essentially inanimate and impersonal causes. Thus Empedocles, as his principles of movement, postulates two *quasi* personal forces, Strife and Love. But having started with these, he at once ceases to be personal; and analysing all substances, not into water, air, or fire, or a vague and illimitable matter, but into a combination of all of these—into what, in fact, we still are accustomed

* Heracleitus has received much attention in Germany as a metaphysician, as well as a man of science. It is only in this last character that he is here alluded to.

to call the four elements—he tries to show how things of necessity evolved themselves out of manifold and long-continued combinations of these.

As a specimen of the way in which Empedocles worked out his theories, it may be mentioned that his account of the origin of species is to a great extent the same as that of Mr Darwin. All sorts of living creatures, he taught, first appeared on the earth, many of them unable to defend or to reproduce themselves, and thus perished in the inevitable struggle for existence. The fittest alone survived by this process of natural selection, and these are the races of men and animals that are now living. Here, then, is a picturesque illustration of the growing inconsistency with itself of the first school of science. We have Strife and Love to explain the beginning of motion, and a crude Darwinism to explain the results of it.

The inconsistency thus indicated was due to the growing distinctness of two separate ideas, which men still tried to identify, and only ended by confusing them. This confusion was first reduced to order by Anaxagoras, another thinker of the same period, who may be said to have been the precursor of the second school of science, by expressing the double idea that was implicit in the first. He no longer treats the world as an animal, or matter as living, and leavened with such affections as love and hate. The matter there was to be moved, and the force there was to move it, he first expressly teaches, are two distinct things. “Matter,” he said, as an epitome of this teaching, “was originally without form and void—all its parts were

confused together: then Mind came, and wrought it into form and order." But not only was this general principle an advance on what had been before; he made a great step also in the working out of it, through his new analysis of matter. This, he taught, consists of an infinite number of minute elementary particles, of a vast variety of kinds,—such as would be produced could we turn all the wood in the world to sawdust, grind all the stone in the world to powder, file all the metals in the world into the same condition, and treat all the other substances we see about us in a like manner. And the present order of things was produced by the gradual cohering together of like particles, the elementary stone-dust becoming stone, wood-dust wood, iron-dust iron, and so on. This process, he taught, as has been said before, was not initiated by the particles themselves, or any principle immanent in them, but by an intelligent and designing Mind, independent of and external to them. But in his application of this theory, Anaxagoras uses his Mind only to account for the beginning of a mechanical movement of the particles, and he then leaves these to do all the rest for themselves. That mechanical movement began as a revolution of the particles at a single point. Then gradually ever-increasing masses were drawn into this vortex, which is still extending farther and farther into the infinite realm of matter; and out of this movement, without any succeeding intervention of Mind, the universe as we know it has evolved itself.

Anaxagoras flourished only a century after Thales. Let us see how far, in this short time, the mind had

wandered away from, and advanced beyond, its original crude theological explanation of things. First, as we have seen already, men regarded the universe as worked and ordered by a race of divine animals, who were themselves an essential part of it. Next they regarded the universe as a single divine animal in itself. Next, from reflecting more systematically on this animal's ways, they came insensibly to change their conception of it, and to ascribe to its movements, in a great measure, a certain blind and essentially impersonal necessity. Next they came to realise that they were really entertaining the idea of two principles, and consciously and explicitly they learnt to distinguish between and to separate them. The universe was once more not a living thing for them; its phenomena were now caused no longer by a set of beings of like passions with ourselves, and of like ways of acting, but by a single supreme intelligence, passionless and bodiless, which, though the original cause of all we see around us, did not cause or interfere with anything of this directly. All it was supposed to have done was to have given matter, in the first place, a shove, and after that, as Goethe says, "to sit apart, and watch the world go."

This stage formed a new point of departure. The conception now arrived at is this, of the universe on the one hand, as a machine in motion, and of an active intelligence on the other, to whom in some way the motion is attributable. But there is this important point to notice. Mind, according to this theory, did not itself form the universe into the machine it is, still

less is it at the present time turning the handle. All it did was to give matter an original impetus, by which matter was itself enabled to form itself into a machine, and a machine retaining within itself thenceforward its own principle of motion. Mind and matter being thus distinctly separated, and the connection between the two being made so vague, and to all appearance so temporary, the next step in scientific thought was to discard this Mind altogether, and to endow matter with the power of starting its own movement, as well as of continuing it. Thus Mind, Design, and Life, as principles of things, disappeared altogether, and came back in an entirely changed position. The case indeed was simply reversed. Henceforward, instead of the motion of matter being looked upon as the effect of a self-dependent life, life was looked upon as the product of the self-dependent motion of matter.

The conception of this general theory formed a new epoch in science. Nor was it only as a general theory that it was in advance of what had gone before. Its exponents at once began to work it out in a more exact way. They reduced these various doctrines to a complete system; and not only this, but they did their best to test them, and to raise them from the state of assumptions to that of verified facts.

The father of this new school was Democritus, who flourished a generation later than Anaxagoras, and about a century and a half after the death of Thales. A century later still, this system of science was propounded afresh, and given fresh currency to, by Epicurus, who also introduced into it some slight modifi-

cations. And it is this system that Lucretius learned from Epicurus, and that we are about to consider at length, as set forth by him.

Before going on to do this, there are one or two points to remember. All the scientific progress we have just been speaking of was confined to the Greek world, and not even amongst the Greeks were its teachings universally accepted. With the general public, theology and polytheism continued to hold its own, and the allegiance of the world of thought was divided between it and metaphysical systems, which, though equally opposed to the popular theology, can yet not be called science at all. Outside the Greek world, this advanced thought had for a long while little influence. Rome for centuries felt nothing of it, but lay buried in what to the eyes of a great philosopher would have seemed savage and debasing superstition. By the time of Lucretius, Greek culture was extending, and with it there was beginning a gradual dawn of scepticism over the Roman world. But the mass of men as he found them were still under the dominion of the old errors —still had their minds darkened by a faith more or less fervent in the old supernatural theory of things. The aim of Lucretius was to preach to them a new gospel, which should once and for all clear their mental vision, and give them a new and a healthier view of life. Such a gospel he conceived himself to have found in the scientific system of Epicurus, and in his practical deductions from it. It was this that he set himself to preach to the Roman people, for their liberation

and their new birth to liberty ; and he was confident in the power of it, not because it was plausible, or because it was pleasing, but first, and before all things, because he held it to be in demonstrable accordance with fact ; because it was based upon observation and experiment, not on fancy ; and because from first to last its hypotheses were capable of verification. It is this scientific system we are now about to consider ; and that it was conceived by Lucretius and his master to possess these characteristics that have just been mentioned, will become plain when we see how they criticised the systems which they designed theirs to replace.

In our examination of this system, it will be as well to treat it as though it were the real property of Lucretius ; and this mainly for the sake of convenience. But we must at the same time remember that though he was, and professed to be, in the main, expounding the discoveries of another, he had to some extent really made them his own, by careful attempts at verifying all their details, and that he had probably also added to them, and perhaps modified them, himself.

CHAPTER III.

THE SCIENTIFIC SYSTEM OF LUCRETIUS.

SECTION I.

THE ANALYSIS OF MATTER.

THE problem Lucretius set himself to solve was a double one. First, What was the original nature of matter? secondly, By what process has it in the course of time arrived at its present state? And the solution he offered was the joint product of certain *a priori* assumptions and reflections, and a keen and extensive observation of natural facts.

His first great assumption, and his first great observation, were as follows: He assumed that all our knowledge was derived from sense,—that the senses were the only channels and the only tests of truth; he observed that the order of things revealed to him by his senses, and whose secrets he had set himself to explain, was something not capricious, but acting in a fixed way, and therefore really constant under all apparent change. “Without fixed seasons of rain,”

he says, "the earth is unable to put forth its gladdening produce ; nor, again, if kept from food, could the nature of living things continue its kind and sustain life." "Or again," he asks, "why should not some men outlive many generations, if it were not that an unchanging matter had been assigned for begetting things, and what can arise out of this matter, is fixed?" He observes, further, another set of facts. "Rains die, but goodly crops spring up, and boughs are green with leaves upon the trees. Trees themselves are laden with fruit; by them in turn our race and the race of wild beasts are fed; by them we see glad towns teem with children, and the leafy forests ring on all sides with the song of new birds." And from this Lucretius arrives at another general conclusion. "Nature," he says, "dissolves everything back into its first bodies, and does not annihilate things."

Here, then, he has two broad generalisations to start with. Nature is uniform; and nothing in nature can come out of or return to nothing. The first of these conclusions he thinks can stand by itself. He seeks to verify the last one thus: If it be not so—if things can come from nothing—then anything might come out of anything. Men might spring out of the sea, fish out of the earth, birds out of the air. In a word, there could be no such uniformity in the world as there very certainly is. Again, for a like reason, it is plain that nothing can turn into nothing; for in that case objects might suddenly disappear, without any external force destroying them. But this, it is

very certain, they never do. And again, if things could ever turn into nothing, everything would by this time have vanished, "eaten up by the infinite time gone by." And "any amount of force must of course undo the texture of things in which no parts at all were of an everlasting body."

He has thus settled that the universe he has to account for is made up of a matter that, in obedience to fixed laws, is perpetually changing its appearance, and yet is never destroyed. To what is this matter reducible in its last analysis? Lucretius answers, to two things—empty space, and atoms. These atoms are particles of an inconceivable minuteness, and are alike in the absence of all attributes or qualities, except solidity, indestructibility, weight, and figure. They are far too small for sight to take any account of; but this need not make us doubtful of their material reality. We can neither see the wind, or smells, or sounds, or heat, or cold; and "yet," says Lucretius, "all these things must be material, because they touch the senses." Equally necessary, too, is the existence of empty space. For if it were not for this there could be no motion; everything would be a single solid mass. But as a matter of fact we may see that even things that seem solid are not solid really—stones, for instance, through which water often oozes. Further, bodies of equal bulk weigh differently,—from which it is plain that some have more void than others. But though empty space seems thus to enter into everything, there are some bodies that are absolutely solid; and such are the atoms themselves, the first beginnings

of things. For unless these were solid, there would be no matter at all. The universe would be empty space. Equally necessary, too, is it that the atoms should be indivisible; because, Lucretius aptly argues, if Nature had set no limits to the breaking of things, bodies of matter would have been by this time so pulverised that nothing could within a fixed time be conceived out of them, and “reach its utmost growth of being.”

Lucretius contrasts this analysis of matter with those of the former speculators, of whom we have already spoken, and shows how inadequate these were to explain the facts of the case. Fire—he asks, how can it possibly be true to analyse all things into fire, and say that they were formed out of it? “How,” he asks, “can things be so various if they are formed out of fire, one and unmixed? It would avail nothing for hot fire to be condensed and rarefied. The heat would only become more intense by the compression of parts, more faint by their dispersion.” No diversity of things could arise in this way; in addition to which, fires can be condensed and rarefied only if there be void, the existence of which those who held that everything was fire necessarily denied. Indeed, says Lucretius, it needs but little exertion of thought to show us that, if we take void away, everything must become solid. Supposing, however, he goes on, that these philosophers think that fire generates various bodies in some other way, not by condensation and rarefaction. This, for other reasons, is equally impossible. For fire, if it ceases altogether to be fiery, ceases to exist.

Fire, according to the hypothesis now in question, is he essence of all matter—is matter in its simplest state. To say, then, that matter, in this its simplest state, is robbed of all its properties, is just the same as saying that it ceases to exist. And in the majority of things about us there are none of the properties of fire. If, therefore, fire was the primal element, it must have first been turned to nothing; and out of that nothing all these other things must have emerged. ‘Again,’ Lucretius goes on, “to say that all things are fire, and no real thing but fire exists, appears sheer lotage. For those who maintain this take their stand on the senses to fight against the senses, which appears to me to be as false as it is foolish. For what surer test can we have than the senses of truth and falsehood? It would be just as wise to deny the reality of fire, and affirm the reality of all other things.”

For similar reasons they are wrong who take for a first principle water, or earth, or air; or air and fire; or earth and water together; or, as did Empedocles, fire, water, earth, and air. These speculators were all alike wrong, because they denied the existence of void, and because they supposed matter to be infinitely divisible.

Again, if all things are produced from four things, and again broken up into four things, there is no more meaning in this statement than there would be in its converse—viz., that the various objects and substances about us were the first beginnings of these elements, not these elements the first beginnings of them. Whilst if, to escape this, it be supposed that

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these four elements meet in such a way that none of them in the union changes its nature, nothing whatever will be able to be produced out of them.

The first beginnings of things must be of a kind quite different from these. They must be of themselves below the reach of sense; their nature must be unseen and latent, and thus capable of infinite conversion and change by means of various combinations. Anaxagoras made a step in the right direction; but then he too denied the existence of void, and he too taught matter was infinitely divisible. His system was therefore as radically faulty as the others. The sort of approach to atomism which he made is likewise evidently unsuccessful, and will not explain the facts of nature. For, according to Anaxagoras, our bodies are made up of an aggregate of flesh-particles, blood-particles, bone-particles, and so on. If this were the case, food could not nourish them, unless it contained in itself small bodies of blood, bone, and flesh. Then, too, if all bodies grow out of the earth, or are nourished by what does so, earth itself must be an aggregate of all these bodies. Wood, when ignited, yields smoke, flame, and ash. On the hypothesis of Anaxagoras, therefore, it must be composed of particles that are foreign to itself. Anaxagoras felt this difficulty, and tried to escape it by saying that all things to some extent are latent in all things, and that each thing is what it is in virtue of those particles of which it has the largest number. But this, says Lucretius, is plainly not the case; for if it were so, we should get blood out of stones, milk out of grass, and fire out of wood without

igniting it. People say that the rubbing of boughs in a forest produces fire ; and this, Lucretius admits, is quite true. But that is not because fire, ready made, is latent in the wood, but because the arrangement of atoms is changed, and, like the rearrangement of the letters of a word, produces a new result.

Atoms and void, then—to these two things everything that is, is reducible. These are the substance of everything, the only things that really exist. Whatever can be named, is either a property or an accident of these two things. The properties of atoms are such things as their shape and weight, which they cannot lose unless they lose their own existence. All things else, such as “slavery, poverty, riches, war, concord,”—these are but accidents, one and all, of atoms and of void. “Time, also,” adds Lucretius, “exists not by itself ; but simply from the things which happen, the sense apprehends what has been done in time past, as well as what is present, and what is to follow after.”

Further, atoms and void are both infinite in quantity ; because, in the first place, it is inconceivable that they should not be so ; and, in the second place, unless they were so, it is plain for many reasons that they would not have produced the results they have done. The first of these arguments is simple enough. Let us make the bounds of things as vast as we will, there must still be something or other outside them. The second set of arguments will appear presently.

SECTION II.

THE FORMATION OF THE UNIVERSE.

The original state of things was, according to Lucretius, not unlike an infinite snowstorm. Infinite atoms were continually falling and falling through an infinite space. They fell thus in virtue of one of their inalienable properties, namely weight, which for ever bears them downwards. Though of different sizes, the velocity of their downward motion was still the same, for they fell through an unresisting medium. With us heavy things fell faster than very light ones, simply because of the resistance of the air, which they have to overcome. The universe was formed by the collision and coherence of these falling bodies. But how did this collision first take place? All the bodies were falling at an equal velocity, and so they could not overtake each other; and if they fell straight downwards—*i. e.*, in parallel courses—they could not jostle against each other. Evidently therefore, in their downward course, says Lucretius, they must tend at uncertain times, and at uncertain points, to swerve a little, but only a very little—not enough to be called a lateral movement. It was owing to this slight and incalculable swerving that the first collision of atoms took place. This collision at once produced a rebound, and this rebound again produced fresh collisions; and there was thus begun an ever-extending clashing and confusion amongst them, like that of

motes in sunbeams, which we may see, says Lucretius, “in never-ending conflict, skirmish and give battle, contending in troops, and never halting, driven about in frequent meetings and partings; so that you may guess from this what it is for first beginnings of things to be ever tossing about in the great void.” In this war of atoms, some, when they clashed, bounded off each other, so as to leave large spaces between them; others bounded off so as only to leave small spaces,—the former kind producing such things as air and sunlight, the latter such things as stone and iron.

This different behaviour of the different atoms is due to their various shapes, some being round and smooth, some round and rough, some forked or pointed,—and so on. The denser substances are formed of forked atoms, which cannot touch without becoming entangled with each other, and are so unable to bound back to any great distance. The rarer and more subtle substances are formed of smooth and fine atoms.

And this same atomic movement which was the beginning of things, still continues to keep them what they are. It is a movement that has gone on from everlasting, and will always continue. Every object about us is in motion within itself, though we see it as a whole to be entirely still; for this atomic movement is infinitely far beneath the ken of the senses. We may conceive its nature, however, and its possibility, by the analogy of a distant flock of sheep, or the evolutions of two distant armies. The sheep, though in reality frisking, and butting each

other, seem to us but a stationary spot of whiteness ; the two armies, though engaged in combat, appear to us but a stationary glitter. The tendency, too, of everything is still downwards, ever downwards ; and the upward tendency of certain things arises only, in some cases, from a rebound ; in others, as in the case of flame, from the substance in question being squeezed upwards by the pressure of other substances.

It will now be apparent yet farther, that matter and empty space must both be infinite. For if space were not infinite, the atoms, always falling, would be by this time lying in a solid mass on the floor of space ; and if matter were not infinite, that infinity of combinations could not have been produced, of which the existing order of things is a survival of the fittest.

And it is partly from this conclusion that Lucretius disproves a doctrine that was current amongst some thinkers in his time,—a doctrine which nearly approaches the modern theory of gravitation, and was allied also with a conception of the sphericity of the earth, and the existence of life all round it. “Some teach,” Lucretius says, “that all things press to the centre of the sum ; that heavy bodies under the earth press upwards and are at rest on the earth, turned topsy-turvy, like the images of things in water ; and that living things walk head downwards, and cannot tumble out of the earth into those parts of heaven below them.” This theory of things he thus dismisses. The universe being infinite, there can be no centre to it. Secondly, even were there a centre, still space everywhere would yield to heavy bodies, and they

could never come to rest upon void, be that void centre or no centre.

We have already seen that the atoms are conceived of as having different shapes. It is further demonstrable, according to Lucretius, that the number of their shapes is finite. For if there were an infinite variety of shapes, some atoms would have to be of an infinite bulk, since limited bodies do not afford room for an infinite variety of detail in their form. Also, were the number of shapes of atoms infinite, there could be no fixed order in nature, but it would go on either infinitely improving or infinitely degenerating. But though the difference of forms is finite, of atoms of each form there is an infinite number; for the sum being infinite, and the number of parts finite, there must be an infinite variety of each kind, else the sum would be finite.

Here then we have an infinity of atoms of a finite variety of shapes; which, though they are thus far qualified, and are possessed also of gravity, have yet no properties individually that can appeal to the human sense. They have, for instance, no colour; and this statement Lucretius takes great pains to verify. Objects, he says, change their colour, but none of the properties of atoms changes; therefore colour cannot belong to the atoms. Nor can such colours as change into others be the product of a number of atoms of various colours. Look at blue bright sea-water, he says, and you will see that its changes of colour are evidently not such as could be produced by any mixture of variously-coloured particles,

Further—and he here comes to a deeper kind of reasoning—colours cannot exist without light,—nay, colours change with the way in which light falls on them, as in the case of the down on a dove's neck. He then goes on to analyse colour into a particular kind of blow given to the pupil of the eye, the nature of which varied with the shapes of the atoms that composed the coloured objects. Thus the sense of colour is but a particular form of the sense of touch, and is no quality in the atoms themselves, but is an accident of their shape. It is curious to find that Lucretius having given this explanation, in which there is really implied a profound truth, supplements it by the shallow and untrue observation that colour can be further proved not to reside in atoms, because the more you tear up a thing the fainter does the colour appear. At any rate, having thus established the fact that atoms have no colour, he goes on more summarily to show that they are without all other sensible qualities as well. All bodies are not vocal, all bodies are not odorous, all bodies do not possess cold or heat; and therefore atoms can have in themselves neither sound nor smell nor temperature. It is only by a series of infinitely complex combinations that the primal materials of things “step by step issue forth to the senses.”

The exact stages in this evolution of the universe Lucretius does not profess to describe accurately, but he gives a general sketch of them which, in some points, is very like what is given us by the most advanced modern speculators. It was a long time,

he says, before the war of atoms produced anything like what we see now. As imagination penetrates back to the first conceivably visible state of things, it discerns nothing but a “strange and stormy medley”—the cosmic vapour of our modern theorists—in perpetual movement, massing itself together now in some parts, now in others, and leaving and filling up various shifting interspaces. At last “the parts began to fly asunder, and like to join to like, and mark off the members of the world, and every one of its mighty parts—*i.e.*, to separate high heaven from earth, and let the sea spread itself out apart, and also let the fires of the ether spread apart, pure and unmixed.”

This process began as soon as the heavy bodies of earth “first met together, and took up the lowest positions.” Having thus met, in virtue of their special shape they went on binding themselves together in a closer union, and forming a denser mass. In this process a large quantity of smoother particles were squeezed out of the earth, and these formed the sea, the sun, the stars, and the vault of heaven. First of all there issued out a fiery ether, which went up as we see mists going up now, and this formed itself into a vast cohering film, which encompasses and bounds our universe, and which we call the heavens. After this, squeezed out in like manner from the solidifying earth, followed the rudiments of the sun and moon, which gradually formed themselves into their present shapes, and turn round in air, midway between earth and heaven, because “they were neither heavy

enough to sink, nor light enough to glide along to the uppermost borders." Considering Lucretius's notions of the inherent weight, and consequent downward tendency, of all atoms, this at first sounds a little strange. He apparently means, however, that they were of such weight that the squeezing power of the earth could only avail to project them to a certain height.

When the material of the heavens and the heavenly bodies was thus withdrawn, an immediate change took place upon the earth's surface, which was at this time completely covered with water. In consequence of the amount of matter that had gone from it, there was in various places a sudden subsidence of the ground. In the hollows and depressions thus formed, the waters were at once collected, and the dry land appeared. The same sort of process still continued, but now with an added agency. "The heat of ether, and the rays of the sun, ever more and more by repeated blows compressed and buffeted the earth;" its softer parts were beaten down into plains, and its harder parts, which could not be thus beaten down, remained as hills; and thus the earth's surface assumed its present form.

Lucretius, it will thus be seen, conceived our universe as a kind of azure bubble, thrown off by the earth, and beaded with stars, the earth itself being the centre, and occupying probably far the larger part of the space enclosed by it; whilst the sun and moon swam, as it were, in the air, which filled all the intervening space between the earth and heaven. It is this

entire system which Lucretius called the world. He conceived the number of such worlds to be infinite, and he held that they were all falling for ever downwards, in much the same way as the atoms did in the beginning.

His knowledge of a large part of this universe he confesses to be far from exact. Of the movements of the heavenly bodies, especially, he can only give conjectural explanations ; but one or other of those he offers, he feels certain must be the true one—for practical purposes, it does not much matter which. On one point, however, he professes that he has attained exactitude. His science has revealed to him the true size of the heavenly bodies. This, he says, is almost identical with that which it appears to us to be. This statement, absurd and indeed unmeaning as it is, if we were to consider it seriously, Lucretius yet arrived at by what may be called a shadow of true scientific method. He could not measure the size of the heavenly bodies directly, but there were other bright bodies whose size he could measure. He observed a variety of flames, noticing their size close at hand ; he then retired to various distances, and noted them from thence ; and the result of these observations, he fancied, was, that however far he retired from a luminous object its size never seemed to diminish. Thus, to produce the effect they do upon us, the actual size of the sun and moon need be no greater than what we see it to be. At the same time, however, he seems to think that extreme distance may have some very small effect in such cases ; and thus, with respect to the size

of the stars, our vision may mislead us somewhat, “but only to a very small degree.”

The sun, small as it is, may give the light and heat it does, from being, as it were, a well-head, whence light and heat gush out; or the heat may not dwell directly in itself, but it may inflame the air when in a susceptible state, as branches make a conflagration; or the sun may have about him a quantity of invisible heat, unaccompanied by fire, and this heat may increase the stroke of his rays.

Night is caused either by the sun, “when he strikes the uttermost part of heaven,” having “blown out all his fires,” or because “the same force which has carried his orb above the earth, compels it to pass below the earth.”

Morning is caused either by the reappearance of the same sun, or “because fires meet together, and many seeds of heat are accustomed to stream together at a fixed time, which cause new sunlight to be born every day.” Strange to say, he seems to think this singular theory, if anything, more probable than the former one. He gravely says that “from the summits of Ida it is reported that scattered fires are seen to appear at daybreak, and gradually collect themselves into an orb.” And if, he adds, this is really what does happen, it is only in strict analogy with many of the most familiar phenomena of nature. Trees blossom at fixed times; rain and lightning are not very irregular; and at fixed times boys change their teeth.

In the same way, a new moon may be born every

day, figured according to its various phases. Or the moon may revolve like a spherical ball, of which one half is self-luminous and one half dark. Or it may be luminous all over, either of itself or by the light of the sun ; and its phases may be caused by its carrying with it an invisible satellite that is perpetually eclipsing it. The eclipses of the sun, too, may be accounted for in the same way ; or “the sun may be able, quite exhausted, to lose his fires at certain fixed times.”

Such in broad outline is the Lucretian universe—the outcome of atoms that have in themselves no sensible qualities. Let us see now, more in detail, how Lucretius accounts for all the variety of substances into which we find they have combined themselves.

This variety, and the results of it, are due to the various shapes and sizes of the atoms, and their various ways of mixing. “There is nothing,” says Lucretius, “which is apparent to sense that consists of one kind of first beginnings. There is nothing which is not formed by a mixing of seed.” As an obvious instance and proof of this, we have the earth, which must contain within itself the seeds of all the things that spring out of it, such as water, fire, and vegetation. For each thing is what it is in virtue of being a combination, a mixture, a clinging together of atoms of certain various shapes, in certain various proportions. It is these various combinations of various atoms that give to things their different textures and properties ; for “since seeds differ, there must be a difference in the spaces between the passages, the connections, the weights, the blows.”

This hypothesis, says Lucretius, will explain all the facts of nature, and will be verified by them. Light, for instance, passes through horn ; but rain is thrown off. Why ? The atoms comprising horn leave in that substance spaces of a certain size and shape. The atoms that compose light are very small, and can pass through these spaces. The atoms that compose water are larger, and cannot. Again, wines flow through a strainer, but oil will not. This is because the elements of oil are larger, or more hooked and tangled, and so cannot be so easily separated. To put the matter generally, hard substances, such as diamonds and iron, are composed mainly of atoms that have many hooks, by which, the instant they touch each other, they are held together ; fluid substances, such as water, are composed mainly of atoms without hooks, which can move with more or less freedom about each other ; and gaseous substances are composed entirely of atoms of a finer and smaller nature still.

The various tastes, smells, sounds, and temperatures of things are due, too, to the various shapes of the atoms that compose them. Harsh tastes come from substances made up of rough, pointed, or hooked atoms ; pleasant tastes, from substances made up of smooth atoms. The atoms of honey and milk, for instance, are smooth ; those of wormwood rough. The creaking of a saw is made of rough atoms ; beautiful music of small atoms ; and so on.

More light will be thrown on this conception of things, when we come to see farther what is Lucretius's theory of sensation, and how he reduces all our percep-

tions to modes of touch. In the foregoing analysis of matter, the inconsistencies and incompleteness are of course obvious. It will be enough, in passing, to mention the two most striking of these. One is, that though it is one of his great points that the atoms are far below the reach of sense, he seems continually to speak of them as though they could individually by their shape affect, or be detected, by the senses. The other is, that this application of the atomic theory quite fails to explain one of the chief phenomena of nature—that is, the change of qualities that takes place in a single substance, hot things becoming cold, sweet things rancid, and gaseous and fluid things solid. This, however, by the way. What we have now to do is to examine the theory of Lucretius, not to criticise it.

SECTION III.

THE INTERACTION OF MATERIAL SUBSTANCES.

We have thus far seen how the universe as it is, was evolved out of its original elements, and the few simple laws of which this evolution was the result. We have next to consider the more complex question of how it is maintained in its present state, with all its various movements and innumerable changes, and the constant uniform relation of its larger parts.

We have seen how atoms behaved in forming sub-

stances ; we must now see why substances behave as they do when formed. Lucretius explains this by a doctrine we have already mentioned,—that nothing, however much appearances may say the contrary to us, is really at rest. We are to conceive of everything in constant motion—solids, fluids, and gases,—in motion within themselves, even when they are at rest relatively to other objects. It is in this way that the heavens are sustained above us from falling on the earth, and the earth sustained from falling on the heavens below ; for the entire space between the two is pervaded by air in ceaseless motion, the particles of which are perpetually bounding and rebounding, striking against the earth on the one hand and the heavens on the other, and thus keeping the whole in place.

It might, Lucretius seems to think, appear doubtful how, according to his theory of the downward tendency of everything, air could sustain the earth. He therefore takes pains to emphasise especially the power that is in air, fine though its atoms be. Life, which, as we shall see soon, he considers to be atomic, can hold the body together, he says ; and the living body does not feel the weight of its separate members. Our feet, for instance, are conscious of no pressure from above. In the same way air prevents the earth from having any weight with reference to the universe.

But we must not only conceive of all bodies as having within themselves this perpetual motion of their particles ; we must also conceive all substances as being, as it were, in a perpetual state of evaporation. Minute particles of themselves are for ever streaming off their

surface. That this is so, we can tell in many cases by practical experiments; and we may thus infer that it is so in every case. We can tell that water is perpetually giving off a certain part of its own elements, by observing how clothes, stretched out to dry on the sea-shore, get saturated with a salt moisture. As we walk by the sea, too, a salt taste comes into our mouths. Scents, likewise, are instances of the same perpetual streaming off of atoms; and so also is colour, as we may see plainly where the sun shines through red or blue canvas, and shows us those colours projected on whatever objects the light falls on.

Thus there is throughout nature a variety of wholly unperceived agencies at work, secretly affecting whatever we can observe to happen, and, as we shall see presently, enabling us to observe and be conscious of it. An illustration of what Lucretius means by this doctrine, and of the use he made of it in explaining nature, is to be found in his account of the magnet, which he says attracts iron for this reason. From the magnet there proceeds perpetually a stream of atoms stronger and more violent than from most other bodies. This stream is perpetually creating a vacuum about the magnet. As soon as iron is placed in the neighbourhood of this vacuum, the air which is in the pores of the iron tries to rush to the vacuum, and fill it up. The iron, however, is of so tough and hard a nature, that the air cannot escape from it, and therefore carries the iron into the vacuum along with it. The magnet does not attract gold, because gold is too heavy for the air to move it; nor again does it

attract wood, because wood is so porous that the air rushing to the vacuum can escape of itself, without taking the wood with it.

Thus the whole universe is what it is, in virtue of this occult movement of everything. All matter is more or less porous, and every substance is ever being permeated and filtered through by emanations from other substances. "One thing," says Lucretius, "is seen to stream through stones, another through gold, another still to go out through silver and brass. Form is seen to stream through this passage, heat through that; and one thing is seen to pass through by the same way more quickly than other things. The nature of the passages compels it to be so, varying in manifold wise, owing to the unlike natures and textures of things."

SECTION IV.

THE ORIGIN OF LIFE AND SPECIES.

Nature, as we have considered it thus far, has been simply inorganic unconscious nature. We must now see the relation that life bears to this. Life and consciousness, according to Lucretius, are the products of a certain combination of substances, interacting on each other by a certain infinitely complex process of atomic movement. "Whatever things we perceive

o have sense," he says, "you must admit to be all composed of senseless first beginnings." This fact he seems to consider evident on the very face of things. We can see instances of it daily before our eyes. "Living worms spring out of dung. Rivers, leaves, and glad pastures change into cattle, cattle change their substance into our bodies, and often our bodies are converted into the energy of wild beasts and vultures. Therefore, by a process similar to that by which dry woods are dissolved into flames, does nature change all foods into living bodies, and engender out of them all the senses of living creatures."

But this change of inorganic into organic substances does not take place suddenly. It has to be brought about through a number of advancing stages, and it is only certain substances that are capable of this change. And yet Lucretius seems to think, on the whole, that under favourable circumstances almost everything might develop the qualities of protoplasm. These qualities depend on the minuteness and the shape of the atoms, and also on their motions, their arrangements, and their positions. "None of which requisites," he says, "we find in woods and clods, and yet even these things, when they have become rotten with rain, bring forth worms, because bodies of matter driven from their ancient arrangements by a new condition are combined in the same way as when living creatures are to be begotten." Further, if this observation of the facts of nature be not sufficient to convince us that life is evolved out of things that are not living, the following argument will put the matter beyond a

doubt. If the atoms that compose conscious bodies were themselves conscious, then the atoms that men are made of would have the qualities of men, and would, amongst their other capabilities, be able to laugh, and to prosecute scientific inquiries, which is manifestly absurd. It is therefore perfectly evident, even in starting, that life is merely a mode of matter; and when we come to consider the nature of life more in detail, it will be more apparent still.

Such, then, being the nature of life, what was the history of its gradual appearance upon the earth? The answer of Lucretius to this is curious in two ways—in its anticipation of the most modern views, and in the unconscious survival in it of the most ancient. Lucretius in this connection seems to conceive of the earth in something the same way as Thales did—as a large animal. No sooner, he says, had the earth assumed its present shape, with its seas and lands, its level plains and its mountains, than there began to grow out of its surface herbage, flowers, and trees, in the same way as feathers and bristles grow out of the skins of birds and beasts. Then—though why the events followed each other in this order is not explained—the earth put forth substances which developed into living beings. First came eggs, which, lying in various places all over the ground, were hatched by the growing warmth of spring. Then, under the joint action of heat and moisture, the earth developed wombs, which lay on its surface, as the eggs did, and were attached to the soil by roots. Within these—how is not stated—infants developed them-

selves ; "and when," says Lucretius, "the warmth of these infants, flying the wet and craving the air, had opened them in the fulness of time, nature would turn to that spot the pores of the earth, and constrain it to yield from its open veins a liquid most like to milk." Such were the first beginnings of animal life. All kinds of creatures, without any act of sexual generation, sprang direct from the earth; and so, indeed, says Lucretius, they still continue to do, but not in such numbers as formerly. For the earth grows old as a woman does; and, like a woman's, her bearing powers get gradually worn out. Once the earth of herself produced "the huge bodies of wild beasts," complete and ready-made. Now, of herself, she can only bring forth such little creatures as worms and the like.

Once, too, of herself, she brought forth corn-crops, and vines, and fruit-trees, which we can now only get by sowing the ground and tilling it; and as far as the earth's productions go, things get worse and worse every year, and to wring the same results out of her requires year by year more toilsome labour.

To return to the question of animal life: the earth in her prime, in her early period of exuberant fecundity, gave birth at random to every conceivable kind of creature, perfect and imperfect. Some were blind, some were dumb, some were mere trunks without limbs, some were sexless. A large number of these, for a variety of reasons, could not propagate themselves. Single or few specimens were produced, and forthwith

perished. Amongst those that were able to propagate themselves, a struggle for existence set in as they increased and multiplied ; and in this struggle those animals were eliminated that were not able to defend themselves. "For," says Lucretius, "in the case of all things which go on breathing the breath of life, either craft or courage, or else speed, has from the beginning of its existence protected and preserved each particular race." The only exception is in the case of domestic animals, which, though they may in some ways be weakly themselves, have survived through man's protection.

This theory of the origin of species, it will be seen, is in one of its main features identical with the Darwinian. It attributes exactly the same results to the struggle for existence. But in another point it is entirely and expressly opposed to it. According to the Darwinian theory, all life began in a single simple form, which slowly differentiated itself, through an unexplained tendency of each organism, not only to reproduce its own likeness in its offspring, but also to reproduce this likeness with slight incalculable variations. In this way varieties of organisms kept increasing, all having sprung from the same parent stem, and spreading out into separate branches, which would, if left to themselves, be for ever branching out anew. The rigours of climate, the difficulty of obtaining food, and so on, acted like a force that stripped from such a tree all its weakly twigs, and broke its unsound branches, leaving those only growing that were strong enough to withstand it. In various places this force

varied, and various textures and forms of branches were thus in various places left growing, and destroyed by it. The innate tendency to variation in animals, which the Darwinian theory thus postulates, was conceived of dimly by some of the earliest Greek philosophers, who held that animals only developed legs, and various other parts of their bodies, when the waters dried up that originally covered the earth, and they were thus forced to adapt themselves to a life on land. But all tendency to variation in species is what Lucretius expressly denies. "All living things," he says, "go on after their own fashion, and all preserve their distinctive differences according to a fixed law of nature." It will thus be seen that the Darwinian theory is an advance on, and differs from, the Lucretian mainly and essentially in this—the way in which the variety is produced which is the subject of the selecting process common to both systems.

SECTION V.

THE NATURE OF LIFE AND CONSCIOUSNESS.

The vital principle, though not identical with the body, is demonstrably itself as truly material as the body. The close connection of the two is a proof of this. For the mind moves the limbs, rouses the body from sleep, and alters the countenance. The mind, too, suffers

with the body. A wound will often cause loss of consciousness, for instance; and that thing must be material which is thus affected by material blows. The vital principle, according to Lucretius, consists of two kinds of ether of surpassing subtlety, diffused through the entire body, and closely connected with each other. Considering how quick are all our thoughts and impulses, the atoms of which these ethers are composed must be perfectly spherical and smooth, and exceedingly small. The entire volume of it must also weigh very little, as after life has left the body, the body does not perceptibly weigh less, any more than wine does when it has lost its flavour or its bouquet.

We are not, however, to suppose that the nature of this ether is single, says Lucretius. It can, on the contrary, be readily analysed into four parts. "For"—so his words run—"a certain subtle spirit mixed with heat quits men at death, and then the heat draws air along with it,—there being no heat which has not air too mixed with it; for since the nature of heat is rare, many first beginnings of air must move about through it." Thus the nature of the vital principle is found to be threefold (*i. e.*, there is the certain 'subtle spirit,' heat, and air). And yet these things all together are not sufficient to produce sense, since the fact of the case does not admit that any of these can produce sense-giving motions, and the thoughts which a man turns over in his mind. Thus some fourth nature must be added to these. This is altogether without a name. There is nothing exists

more nimble or more fine, or of smaller or smoother elements. It first transmits the sense-giving motions through the frame,—for it is first stirred, made up as it is of small particles. Next, the heat, and the unseen force of the spirit, receive the motions; then the air; then all things are set in motion, the blood is stirred, and every part of the flesh is filled with sensation.

The mutual connection of these four elements of the vital principle, Lucretius admits that it is very hard to explain. All he says he can do is to illustrate it by an analogy. “As in the flesh of any living creature there is a smell and a heat and a savour, and yet out of these there is made up one single bulk of body, so the heat and the air, and the unseen forces of the spirit, mixed together, produce a single nature, together with that nimble force, which transmits to them from itself the origin of motion, by means of which sense-giving motion first takes its rise through the fleshy frame.”

The effects of these various elements are perpetually being visible in the actions and the characters of living things. An angry fire flashes from the eyes in virtue of the elements of heat. Fear is due to the operation of a spirit, which is of a low temperature. A calm cheerfulness is due to a preponderance of the element of still air. Thus passionate animals, such as lions, have in them more of the heat principle. Shuddering, fearful animals, like stags, have more of the chilly principle. Oxen have more of still air. Men have all these elements more equally mixed in them. It is true that they inherit various tendencies

which they cannot utterly eradicate; but the bent given us by our parents is so small, that practically we may overcome it.

Such is the vital principle, and though dwelling in the body and permeating the body, it is not, says Lucretius, as some contend, a mere harmonious working together of the body. For the body is often sick, whilst the mind is enjoying pleasure: often the reverse is the case. Then, too, whilst the body is lying senseless in sleep, our mind is often awake, and is feeling joy and sorrow. Farther, life still stays in the body when many limbs have been lopped off; "and yet the same life, when a few bodies of heat have been dispersed abroad, and some air has been forced out through the mouth, abandons at once the veins, and quits the bones. And thus we see that all bodies do not alike uphold existence, but rather that those seeds which constitute wind and heat cause life to stay in the limbs."

This vital ether, which has been analysed into four constituent elements, from another point of view divides itself into two—viz., the Mind and Soul, which, however, do but "make up a single nature." The mind is the directing principle, and has its seat in the heart. "All the rest of the soul disseminated throughout the body obeys and moves at the beck and movement of the mind.

"The mind has more to do with holding the fastnesses of life, and has more sovereign sway over it, than the power of the soul. For without the understanding and the mind, no part of the soul can maintain itself in the frame for the smallest fraction of

time. The mind alone, itself, knows for itself, and rejoices for itself, at times when the impression does not move either the soul or the body together with it. But when the mind is excited by some vehement apprehension, we see the whole soul feel in unison through the limbs; the cheeks turn pale, the skin sweats, and often the whole body faints away."

It will thus be seen that Lucretius, though he does not seem to have elaborated his entire conception of the matter into perfect clearness, conceives of the vital principle as a kind of ether, pervading the body, with a nucleus of a special and peculiar sensitiveness, which had its special seat in the breast. This nucleus was extremely sensitive to any appulse from without; it was capable also of spontaneous movement. Its movements, when not violent, it could confine to itself; but if they passed a certain limit, they at once communicated themselves to the rest of the ether, and this in its turn affected the parts of the body through which it was diffused. We shall, however, understand the matter better when we have examined more in detail the way in which Lucretius conceives the outer world to reach this ether, and produce in it the sensation of consciousness.

SECTION VI.

LUCRETIUS'S THEORY OF VISION.

We have seen clearly that Lucretius reduces all the senses to modes of touch. Taste, smell, and sound are touches more or less violent of particles of matter, driven in various ways against our bodies, and penetrating in various places into them. We have seen also in what a perpetual war and turmoil he conceives all material things to be; so that it is impossible for us to move anywhere, or in any direction, without walking, as it were, through a cloud of dust, that beats perpetually on us from every side. Sounds, smells, and tastes are therefore ever beating on us, and finding their way into us, each at its appointed door.

This is easy enough to comprehend. That vision is produced in an exactly similar way, may not at first be comprehended quite so easily. Such, however, is the theory of Lucretius. Just as smells stream off some bodies, and tastes off others, or as from some smells and tastes stream off together, so from all bodies alike there is yet another kind of emanation that is perpetually proceeding. Nothing visible exists that is not perpetually shedding off from its surface a picture or image of itself. Such pictures "are like films, and may each be named a rind." These films are perpetually being shot forward, in every direction, following one after another with extraordinary rapidity, each film being a complete pic-

ture in itself, and inflicting a separate blow on any object in its way. They are of extreme thinness and fineness of texture, and as soon as ever they touch any rough substance, such as stone or wood, they are instantly dashed to pieces. This is the reason why such substances are opaque. There are other substances, such as glass, whose vacant spaces are of such a shape that the films can pass unbroken through them ; and this is the reason why such substances are transparent. There are, again, other substances at once very smooth and very hard, such as mirrors, through which the films cannot pass, and which yet cannot break them up and destroy them. By a sort of rebound, therefore, they are sent back again. This is the explanation of the phenomenon of reflection.

As to the laws by which these films move, there seems to have been some confusion in the mind of Lucretius. The obvious fact that we cannot see round corners, must have led him to conceive of their general movement being only in a straight line ; and he had studied the matter with sufficient accuracy to show him that "nature," as he expresses it, "constrains all things, when they are carried back and recoil from things, to be given back at angles equal to that at which they impinged." But, in spite of this, he imagines there are certain films that wander about in tortuous courses, apparently under the control of no law, straying far away from the objects from which they originally proceeded ; and other films, he imagines, which have no corresponding objects at all, and which have not emanated from the surface of anything.

The movement of all these films is extremely rapid, as one may prove in a moment by observing how, “as soon as the brightness of water is set down in the open air, if the heaven is starry, in a moment the clear radiant constellations of ether imaged in the water correspond to those in heaven.” It is the breaking of these films against the eye that produce vision. They are driven against it one after another, packed together as though they were the pages of a picture-book. Did they merely come one at a time, they are so fine that no one could see them; but when “thrown off constantly and repeatedly, they yield a visible image.”

As to the structure of the eye, and the way these films are received by it, Lucretius says nothing. He treats the eye as he treats the palate. The two organs each sufficiently explain and illustrate the other. As it is the nature of the one to taste, it is the nature of the other to see.

Between, however, what the eyes really show us, and what we may fancy they show us, he distinguishes with an accuracy and acuteness that in later times the world was long in recovering. The eyes, he says, do not see distance. All they show us are certain shapes and colours, as though they were all painted on a flat sheet of paper, and thus without solidity. The perception of distance is an act not of sight but of unconscious inference. It is produced in this way. Every film, as it is shot along through the air, drives a certain amount of air before it; and the greater the distance that a film has travelled before reaching the eyes, the greater are the power and the volume of this air. This air, says

Lucretius, "brushes the eyes as it enters them, and so passes through. The consequence is, that we see how far distant each thing is. And the greater the quantity of air that is driven on before it, and the larger the current that brushes our eyes, the more distant each different thing is seen to be." Nor must we wonder that we only see a single object when the sight of it is produced by a continuous number of films striking our eyes. "For thus when wind too beats us with successive strokes, and when piercing cold streams, we are not wont to feel each single particle of the wind or cold, but rather the whole result; and then we perceive blows take effect upon our body, just as if something or other were beating it, and giving us a sensation of its body outside."

We shall realise this whole theory more vividly if we examine the way in which Lucretius uses it to explain the phenomena of reflection, and in especial the reason why we seem to see objects *inside* mirrors or reflecting surfaces. "The case," he says, "is really merely the same as when we see things in their reality beyond a door." That vision, as will be plain enough, is caused by two separate airs, the air inside the doorway and the air outside it. Supposing there is a doorway twenty feet from us, and through the doorway we see a man standing twenty feet beyond it. The films, or images of the doorway, and the leaves of the door, carry to our eyes in reaching us the intervening air that is within the room; and from the volume of that, we infer instinctively that the doorway is at its actual distance from us. The films, or images of

the man beyond the doorway, carry to our eyes also a similar amount of the air that is within the room ; but, in addition to this, they carry also an equal amount of the air from out of doors, and from this we infer instinctively that the man is at as great a distance from the door as the door is from ourselves. In the same way, two airs of different volume make us see reflected objects as though they were inside the surface that reflects them. It happens thus : Suppose a mirror to be twenty feet from us, the image of the mirror carries an air to our eyes, from the volume of which we at once infer the distance. The instant after we have felt this air, our pupil receives the image. We see the mirror, and we know how far off it is. Meanwhile an image of ourselves has been carried to the surface of the mirror, and in another instant rebounds back again to ourselves, and is received by the eyes. This image carries with it, as the image of the mirror did, another air, and an air of exactly the same volume, which follows the former air so closely, that the sensations produced by the two are practically united ; and our first inference that the mirror was twenty feet from us, is supplemented now by the inference that our own form reflected in it is forty feet from us,—in other words, that it is as far inside the mirror as we are outside it.

“ And now,” says Lucretius, “ to explain the other phenomena of reflection. The right side of our bodies is seen in mirrors to be on the left, because when the image comes and strikes on the plane of the mirror, it is not turned back unaltered, but is beaten out in a right line backwards,

just as if you were to take a plaster mask before it is dry and dash it over a pillar or beam, and it forthwith were to preserve the lines of its features undisturbed in front, and were to strike out an exact copy of itself straight backwards. The result will be, that the eye which was right will now be left, and conversely the left become the right. An image may also be so transmitted from one mirror to another that five or six images are often produced. And thus all the things that bask in the dimmest corners of a house may yet all be brought out through winding passages by the aid of a number of mirrors, so unfailingly does the image reflect itself from mirror to mirror ; and when the left side is reflected it becomes the right side in the new image ; then it is changed back again, and turns round to what it was. Moreover, all mirrors which form little sides possessing a curvature resembling our sides, send back to us images with their right, corresponding to our right, for one or other of two reasons ; either because the image is transmitted from one side to another, and then, after it has been twice struck out, flies to us ; or, it may be, because the image, when it has come to the mirror, wheels round, because the curved slope of the mirror teaches it to turn itself as we are turned. Again, you would think images step out and put down their feet at the same time with us, and mimic our actions. This happens because, from before whatever part of a mirror you move away, from that part forthwith no images can be reflected, since nature constrains all things, when they are carried back and recoil from things, to be given back as angles equal to those at which they impinged."

The sun, Lucretius says, blinds the eyes, because the images of it "are borne through the clear air with great downward force from on high, and strike the eyes, and disorder their fastenings."

We can see light things out of the dark, because

"when the black air first has taken possession of the eyes, the light air enters in afterwards, and cleanses the black shadows of the other air; for this is a great deal more nimble and subtle and efficacious." We cannot, however, see dark things out of the light, "because the grosser air of darkness follows behind and quite fills all the openings, and blocks up the passages of the eyes, not letting the images of any things at all be thrown into the eyes to move them."

When "all looks yellow to the jaundiced eye," this is because "greenish-yellow seeds stream from the man's body, and meet the images of things; and many, too, are mixed up in the eyes."

When distant objects look blurred and hazy to us —when square towers, for instance, seem to be round, and to lose all their angles—"this is because, while the images are borne in through much air, the air by repeated collisions blunts the stroke."

In spite, however, of these, and many other optical delusions, we must not admit that the eyes can in any way deceive us. The deception is due to another cause.

A few familiar instances will explain to us the real nature of the case. When we are sailing, the coasts seem to move away from us, not we from them. The stars, which are really in constant movement, seem, if we watch them on a clear night, to be completely at rest; and again, if we watch them on a cloudy night, through the driving rack, they seem to be moving far faster than they do. But in these cases it is not the eyes that cheat us; it is the mind that

makes wrong inferences from the data given by sight. “It is the province of the eyes,” says Lucretius, “to observe in what spot soever light and shade are; but whether the lights are still the same or not, and whether it is the same shadow which was in this spot that is now passing to that, this the reason of the mind, and only it, has to determine; nor can the eyes know the nature of things.” Light and shade—it is this, and this alone, we can be really said to *see*. Distance and solidity—in a word, the real figure and the real position of anything—this we do not see, but we infer. And if we would seek for the source of optical delusions, we must seek it only in “the mental suppositions which we add of ourselves, taking those things as seen which the senses do not see. For nothing is harder than to separate manifest facts from doubtful, which the mind straightway adds on of itself.”

SECTION VII.

THE MIND AND SENSE.

Closely connected with his theory of vision is Lucretius’s explanation of the chief phenomena of the mind, and especially the will and the imagination. Images of things, as we have seen, he conceives to be wandering about everywhere; and these, as has been observed before, are of various kinds. Those we have

been just considering are apparently conceived of as discharged exclusively in straight lines, and gradually dissolving after they have travelled a certain distance. But besides these, there are others of "a far thinner texture than those that take possession of the eyes." Of such thin images the air is full. They are floating hither and thither in incalculable courses; and when they meet, they continually get entangled with each other, "like cobwebs, or pieces of gold-leaf." Hence they are each made up of countless actual things; but taking each as a whole, it is usually a thing with no existing counterpart. Some of these composite images are forms of possible though not of actual things; others of things that are in their very nature impossible, such as centaurs, or satyrs, or chimæras, which are formed from the chance combinations of images of men, and horses, and goats, and other animals. "That this must be so," says Lucretius, "it is easy enough to see. For so far as one result is like another, that which we see with the mind and with the eyes must be produced in a like way. And since I have shown that we perceive a line, for instance, by means of films or images thrown off its surface, you may see that the mind is moved by a precisely similar cause, with only this one difference, that it perceives much thinner images." Here we have the explanation of dreams. In sleep the mind only wakes; and, undisturbed by those thicker images to which the eyes are sensitive, it is beset by wandering multitudes of the thinner kind that has been just described—images, for the most part, probably, fantastic and composite, but

ometimes intact, and corresponding with actual things, as when our dead seem to come back to us and visit us.

These images, too, seem to move and act like living creatures. Why? The explanation Lucretius gives of this is very curious. This appearance of movement is produced in much the same way as is that of the figures in a zoëtrope. We have already seen that Lucretius seems never to conceive of these images as wandering about, or being discharged singly, but as closely following each other, or as being packed closely together like the leaves of a picture-book. And the apparent movements of the dream-images are produced by a succession of such images of a single object, each in a slightly different position.

Lucretius's theory of dreams will help us at once to understand his theory of the imagination. Imagination, according to him, is little else than a selected dreaming. When we are asleep the dream-images have us at their mercy, and assail and excite our minds without explicable law. But when we are awake, and our body is sensitive to all external influences, the mind is more fenced about: and just as the bodily eyes practically see only those things that they pay attention to (for, be they never so plain, if we do not attend to them, "it is just the same as if they were far away and distant"), so the mind, unless it pays attention to these thin images, can in our waking moments perceive none of them. When, however, the mind wishes to imagine a certain thing, what happens is this: it strains its powers to see images of a certain

kind ; and such images are, according to the Lucretian theory,* always about us in innumerable multitudes. If we want to imagine a lion, for instance, there are always lion-images in our neighbourhood. Our mind need but attend to them, and it will at once see them. This is the reason why, “when the will has occurred to any one to think of a thing, the mind does on the instant think of that very thing.”

“ And now,” says Lucretius, “ I will explain how it comes to pass that we are able to step out when we please, and how it is given us to move about our limbs, and what cause is wont to send forward the great load of our body. I say that images of walking first present themselves to our mind, as we said before. Then the will arises; for no one wills to do anything until his mind has first determined what it wills. From the very fact that it first determines such a thing, there is an image of that thing. When, therefore, the mind bestirs itself in such a way as to will to walk and step out, it strikes at the same moment the force of the soul, which is spread over the whole body, throughout the limbs and frame ; and this is easily done, since the whole is held in close union with the mind. Next, the soul in its turn strikes the body, and thus the whole mass by degrees is set in motion. Besides this the body becomes rarefied, and the air enters in, in great quantities, through the opened pores, and is thus distributed into the most minute parts of the body. In this way, then, by these two causes acting in two different ways, the body after the fashion of ships is carried on by sails and wind. And herein it need not excite any surprise that such very minute bodies can steer bodies that are so heavy, and turn them about; for wind, though of a fine and subtle body, can push on a large ship, and one hand can direct it to any point you like.”

It will be seen from the above passage that the entire theory of Lucretius on these points betrays a certain confusion of thought. Will, he says, arises in the mind on a certain image being presented to the imagination. But he holds it to be also equally true that each act of imagination must be preceded by will. What is the cause, then, of that initial act?

The answer to this question is one of the most curious things in his whole system. Though in treating of the will and the imagination he seems to conceive of the latter as solely the producer of the former, yet in another place he fully recognises the fact that the former is also the producer of the latter; and he ascribes to it, in this capacity, all the attributes of absolute and undetermined freedom. The human will is self-determining; it is the producer of succeeding circumstances; but, to a great extent, at least, it is not the product of preceding circumstances. It is a “man’s own will,” he says, “that makes for each a beginning.” And again, “The power has been wrested from the Fates, by which we go forward whither the will leads each.” Thus eager horses on the race-course cannot leap forward so quickly as the mind desires. Here the first cause is the mind. It is from the mind that the motion is transmitted through the body. Such cases as these are plainly quite distinct from those in which we are propelled onwards by a blow from without. “For do you not perceive,” he says, “that though in this case there is an outward force that pushes men on, there is yet something in our breast sufficient to struggle against resist it? And when this something chooses, the

store of matter is impelled sometimes to change its course through the frame, and after it has been forced forward is reined in." Hence, Lucretius argues, it is evident that all "motion cannot be linked together, nor a new motion always spring from another in fixed order." The mind is atomic, and therefore this freedom of the mind is the result of a certain freedom from conditions in atomic movement. "There must, besides blows and weights, be another cause of motion, from which this power of free action has been begotten in us." This cause is none other than that tendency of the atoms, which in the very beginning he was obliged to postulate, to deflect continually a little, here and there, from their downward course; without which, as we have seen, they would never have jostled against each other, but would have gone on falling to all eternity in parallel lines, and at their original distances.

It certainly seems at first sight that, according to this theory, not the mind only would be delivered from natural law, but that there would be no uniformity in nature anywhere. And Lucretius nowhere offers any direct explanation of this difficulty. It seems not improbable, however, that could we get to the bottom of his conception, we should find that, the mind being according to him the subtlest and most mobile of all material things, the atoms composing it were able to retain the whole of their original freedom; whilst in the case of all other substances, it had been overcome by their weight and their coarser texture.

SECTION VIII.

THE MORTALITY OF MIND AND SOUL.

We have seen how closely mind and soul are in the Lucretian theory connected with the body. From this theory Lucretius deduces further, that mind and soul cannot live as soon as that connection is severed. The vital principle is not the body, but it is held by the body, and it grows and changes with the body's capacities for holding it. Under some of its aspects, though he never says as much, Lucretius seems to have conceived of this principle as a kind of subtle and powerful secretion of the body,—a sort of potent gas or ether, generated by the flesh and blood, and reacting on it.

The following are the various arguments by which he seeks to demonstrate that, if the mind and soul are essential to the life of the body, the body is also essential to the life of mind and soul, and that all consequently perish and are dissolved together. In the first place, mind and soul being, as has been shown, made up of the smallest atoms, they will be spilt abroad as water is when the body—the vessel that contains them—is broken. Also, we see mind makes its first appearance when the body does; it grows with the body, it declines with the body, and therefore, according to all analogy, it will perish with it. The mind is subject to pain as the body is; therefore, according to all analogy, it will be subject to death also. Diseases of the

body, drink, and other excesses, disorder the mind, and the mind is often healed by medicine as the body is. Here is another symptom of the mind's mortality.

Further, we see men die piecemeal,—the vital soul leaving the limbs one by one. Were the soul immortal, it would mass itself in the unaffected parts. This, however, it evidently does not do ; for, if it did, such parts would manifest a greater amount of sense. The mind has its seat in a particular part of a man's body, just as hearing has its seat in the ear. But if the ear be cut off, it mortifies ; and so, in like manner, when the body goes will the mind decay.

At death, if the mind was immortal, “it would not so much complain of dissolution as of getting rid of its vesture, like a snake, or of being turned out of doors.”

Again, if the soul be immortal, “and can feel when separated from the body, we must suppose it to be provided with five senses. But neither eyes, nor nose, nor hand, nor tongue, nor ears, can exist for the soul by themselves, or perceive anything apart from the body.”

Here is another fact to notice. Men in various ways—in fighting, for instance—lose their limbs, and go on with their occupation, if violently excited, without perceiving their loss. Meanwhile the limbs lie on the ground quivering. Because they quiver, it is evident that they retain something in them of vital principle. But it is impossible to think that in each piece there is remaining an entire soul, for in that case a man would have many souls. The soul or vital principle has therefore been cut up and divided ; but that which can be cut up cannot be immortal.

Again, if the soul is immortal, and comes into our body at birth, as some hold it does, why cannot we remember our former existence? If between our two existences there has been such a break of consciousness, this is equal to death, and in no sense can the two existences be called the same. So we must admit that the soul which was before has perished.

Again, if the mind were waiting ready-made to join our bodies at the instant of birth, it would not be dispersed, as it is, over all the body, "so that even our very teeth seem to have life in them, but it would be in a den apart by itself." Or if, on the other hand, it oozes in from without, and so blends itself with all the limbs in that way, much more will it be mortal; for, says Lucretius, "whatever oozes in through another thing is dissolved, and therefore dies."

Again, we observe that living creatures, such as worms, spring out of dead bodies. It is plain from this that fragments of the soul are left in the body after death, therefore the soul is not immortal. For it is impossible to believe that these worms have each of them a separate and newly-made soul, that builds for itself a place to dwell in.

We must consider this also. The character of the various species of animals could not remain constant as it does, if ready-made souls could at random find their way into bodies. Some meet this by saying that souls are altered by the bodies they live in. But this, says Lucretius, is false, for this reason, "that whatever is changed is dissolved, and therefore dies." But if men say that human souls always cling to human bodies,

and so on, “how is it that a soul can change from wise to foolish, and that a child has no discretion?” Men will say that a soul grows weakly in a weakly body. But even if this be so, it must, from this very fact, be all the more admitted that the soul is mortal, since “changed so completely through the frame, it loses its former life and sense.”

Again, what can be more ridiculous than the picture which the mind will have to present to itself if it conceives souls to have separate existences, before their respective bodies are prepared to receive them, than a throng of souls crowding about each body, as soon as it is completed, and struggling to get admission into it?

Finally, the analogy of all nature tells us that nothing can live but in its own especial element, or surrounded by its own special conditions. Trees cannot live in the sky, nor fish in fields, nor can we find blood in stones. “In like manner the nature of mind cannot come into being alone without body, nor exist far away from the sinews and blood.”

SECTION IX.

THE IMPERFECTION AND MORTALITY OF THE UNIVERSE.

Such, then, is the Lucretian conception of the universe of mind and matter, or rather of matter

organic and inorganic, animate and inanimate—the joint work of chance and of necessity, without purpose, without a mind to guide it.

Even without any scientific knowledge of the origin of things, says Lucretius, the manifold and manifest defects of this universe would at once make it clear to us that it was the work of no divine creator. Much of the earth, for instance, is wastefully occupied by mountains and forests and seas. Extremes of climate make many regions unfit for human habitation. Whatever of the land is left for tillage, only yields its fruit grudgingly, when compelled by incessant toil and labour. And then, even when the fruits of the earth have sprung up, heat and storm and frost often cast them down untimely. Much of the earth is also infested by wild beasts, whose existence can fulfil no possible end. Children, too—the young of the noblest and chief of living creatures—are born miserable, wailing, and helpless; whilst the young of the lower animals grow up without any of the care that is needed by us, and nature yields to them all their food ungrudgingly.

What the beginning of this universe was we have already seen. As it is clear that it had a beginning, so, says Lucretius, it is equally clear that it will also have an end. Everything, in his eye, points to this conclusion. Fire, water, earth, and air, “out of which this sum of things is seen to be formed, do all consist of a body that had a birth, and is mortal. The whole world, therefore, must be reckoned of a like body. I see that the chiefest members and parts of the world

are begotten and destroyed anew; I may accordingly be sure that for heaven and earth as well there has been a time of beginning, and there will be a time of destruction." Let us consider the four elements separately. Earth is visibly mortal, because it is broken by the tread of men into dust, which is carried off by the winds; and water also eats away and dissolves it. Water is visibly mortal, because, though seas and rivers are always full, they are yet always losing their waters by evaporation, and also by absorption into the earth. Air is visibly mortal, because "it is changed over its whole body every hour, in countless ways. For whatever ebbs from things, is always borne into the great sea of air; and unless it in return were ever in many places ceasing to be air, and were also in return giving back bodies to things, all things would now have been dissolved and changed into air." The same, too, is the case with light and fire, which is for ever being supplied, and for ever wasted. All luminous things, the sun and the stars in heaven and the lamps and fires of earth, are always losing their substance by each fresh emission of light, and are consequently being recruited from some other element. Nor is any substance so solid that it does not waste away. Stone towers gradually waste and crumble. Rocks tumble off the tops of mountains. Even iron and brass are corroded, and gradually cease to be. They resolve themselves into some other form. All the elements, in fact, are at strife with one another, each preying upon and eating into the other. The sun, for instance, is always trying to drink

up the waters ; but hitherto, says Lucretius, he has failed, so abundant are the fresh supplies of water ; “though once, there is a tradition, that fire got the upper hand ; and once, as the story goes, water reigned dominant in the fields.”

From all this, we may conjecture the way in which the final disruption will take place. Nor, according to the theory of Lucretius, can there be wanting the chance of the catastrophe happening in yet another way. This universe which we call ours, is, as we have seen, a kind of azure bubble, with the earth in the middle of it. It is one only of an infinite number of similar worlds, which are all for ever falling downwards through the infinite void. It must be possible, therefore, according to the Lucretian theory, that between two or more universes there may at any moment be a collision.

It is, however, to causes from within that Lucretius seems chiefly to look for the final dissolution of things. Nor does he seem to think that this dissolution is an event that promises to be very distant. He conceives the world to have taken not many centuries in bringing itself to its present condition ; and he bases this opinion on the fact that he knows of no history that goes farther back than the Theban war and the destruction of Troy. “Therefore,” he says, “the truth, I think, is, that the whole has but a recent date, and the nature of the world is new, and has but lately had its beginning.” But if, he concludes, there have been, as some men hold, other races and other civilisations, of whom all record has perished in some

great flood or earthquake, all the more must we admit the entire future destruction of the earth and heaven. "And in no other way are we ourselves proved to be mortals, except because we all alike in turn fall sick of the same disease with those whom nature has withdrawn from life."

SECTION X.

THE HISTORY OF HUMAN PROGRESS.

Having now seen what was the Lucretian conception of man's dwelling-place, and also of his origin and nature, it remains to consider the account given of his progress from his earliest to his latest stage ; the history of society, of art, of manufactures ; and, lastly, of religion. And here, as has been observed already, we shall find Lucretius, in a rough and general way, in singular accordance with the most modern speculation, and entirely opposed to a number of fanciful theories, such as that of the state of nature, and so forth, which have been current in later times.

Men at first, says Lucretius, were savage, hardy creatures, scarcely to be distinguished from the lower animals, whom indeed they had not yet learnt to subjugate or use for food. They had neither fire, nor clothing, nor shelter, neither laws nor religion. They felt no wonder and no awe at nature. They acquiesced

quietly in her courses. Their struggle for food, and to protect themselves against the wild animals, occupied all their time and thoughts. Having no leisure for reflection, they neither imagined gods nor feared them. In time they took a step forward. They learnt the use of fire, probably from the ignition of wood in forests, through the rubbing together of the branches. Having thus discovered fire, they learnt to apply it to cooking, from observing how the heat of the sun mellowed fruits, and improved the taste of them. Then by chance they discovered the use of metals, and how to use and work them, in the following way. When large forests caught fire, either from lightning or from some other cause, streams of various metals would often gush out of the veins of the heated earth. "And when men saw them afterwards cool into lumps, and glitter on the earth with a brilliant gleam, they would lift them up, attracted by the light and polished lustre, and would see them to be moulded in a shape the same as the outline of the cavities in which each lay. Then it would strike them that these might be moulded by heat, and cast in any shape soever." Gradually also they learnt to subdue and slay the wild animals, and use their skins for clothing; and they also made huts for themselves.

They now entered on a new stage of existence, of which the most important feature was monogamy. Here, says Lucretius, we have the source of all subsequent improvement—indeed, of the real humanisation of humanity. For now it was that the family affections sprang up round separate homes and firesides.

"The fire made their chilled bodies less able to bear the frost beneath the canopy of heaven, and Venus impaired their strength, and children with their caresses soon broke down the haughty temper of parents. Then, too, neighbours began to join in a league of friendship, mutually desiring neither to do nor to suffer harm ; and asked for indulgence to children and womankind, when, with cries and gestures, they declared in stammering speech that meet it is for all to have mercy on the weak. And though harmony could not be established without exception, yet a very large portion observed their agreements with good faith, or else the race of man would then have been wholly cut off, nor would the breed have continued their generations to this day."

Most of this gradual progress was due, especially so far as material improvement went, to the special genius of individuals ; and accordingly, for some time knowledge was power, and men of intellect ruled the rest. For it was only gradually and with difficulty that mind obtained any mastery over matter. At first men used all the metals promiscuously. They made axes and tools out of gold and silver, and only by long experience found out that these were not so serviceable as the harder metals. At last they made this discovery ; and then the harder metals—such as copper, and, lastly, iron—were for a time looked upon as more precious than gold.

In the same gradual way did men learn all the other arts and ordinances of life. The art of weaving followed on the discovery of iron, "because the loom is fitted with iron, and in no other way can such finely polished things as the details of the loom's machinery be made. And nature impelled men to

work up the wool before womankind,—for the male sex in general far excels the other in skill, and is far more ingenious; until the rugged countrymen so upbraided them with it, that they were glad to give it over into the hands of women, and take their share in supporting hard toil."

Thus gradually, through repeated struggles and repeated failures, did the civilisation of man grow—the work of the industry and labour of the many directed by the sagacity of the few.

Whilst all this was going on, Lucretius conceives an important change to have taken place at one distinct stage. "Kings began to build towns and lay out a citadel as a place of refuge for themselves, and divided cattle and lands, and gave to each man in proportion to his personal beauty and strength of intellect." Afterwards riches began to get more unequal. The few contrived to centre in themselves most of the goods of the many; gold too—though how, Lucretius does not say—grew to be looked on both as a sign and a constituent of riches, sought after by all, and amassed by some. Thus a new factor, a new power, was introduced into life—the source of half life's present misery. Riches—a false aim—had now arisen to lure men on; and the possession of riches now gave more power than the possession of intellect. Thus all things were turned upside down—the criterion of personal merit, and the general idea of what is happy or desirable in life.

Two things now remain for us to consider—the rise of language, and the rise of religion, both of which were wanting to the earliest races of men.

As to language, says Lucretius, the popular notion that it was invented by some particular man, who at a certain time invented a name for everything, is nothing but sheer folly. For "why," he asks, "should this particular man be able to denote all things by words, and to utter the various sounds of the tongue, and yet at the same time others be supposed not to have been able to do so? Again, if others, as well as he, had not made use of words amongst themselves, whence was implanted in this man the previous conception of its use? or how could one man constrain and force many to learn the names of things, or, when learnt, to use them?" Far from having been taught in this way, language shaped itself slowly, and in the most ordinary course of nature. "Nature impelled men to alter the various sounds of the tongue, and use struck out the names of things, much in the same way as the inability to speak is seen to drive some children to the use of gestures, when it forces them to point with the finger at the things that are before them." Nor is there anything strange in this, "since dumb brutes," says Lucretius, "and wild beasts, are accustomed to give forth distinct and varied sounds, when they have fears and pains, and when joys are rife." Thus dogs give quite distinct barks, when enraged, or when feeding their whelps, or when giving an alarm at the approach of thieves. The same is the case, too, with all other animals. "Therefore, if different sensations compel creatures, dumb though they be, to utter different sounds, how much more natural is it that men in those times should have been able to denote dissimilar things

by many different words? Whilst as for music and poetry, and every kind of musical modulation, this they learnt from the birds; “whilst the whistlings of the zephyrs through the hollow reeds first taught peasants to blow into hollow stalks.”

And now, in conclusion, let us see what the Lucretian account is of the rise of religion. Man at first, as has been observed already, he says explicitly, had no trace of it. Modern theorists seek its origin in the wonder of early man at the phenomena of nature, and first amongst these, at the movements and effects of the sun. This, strangely enough, Lucretius seems to anticipate, and contradicts explicitly. “Never,” he says, “would the early race of man with loud wailing call for the daylight and the sun, wandering terror-stricken over the fields in the shadows of night, but silent and buried in sleep would they wait till the sun with rosy touch had carried light into heaven; for, accustomed as they had been from childhood always to see darkness and light begotten in succession, never would any wonder come over them, nor any misgiving that never-ending night would cover the earth, and the light of the sun be withdrawn for evermore.” Religion was the result, Lucretius thinks, of a deliberate and a later-developed kind of reflection,—though he hardly distinguishes this with sufficient clearness from the sort of wonder he here denies man to have experienced. In time, he says, men observing that the system of heaven and the seasons came round in regular succession, tried and failed to find out by what causes this was brought about; and at length were

compelled to postulate the existence of gods, to whose action*these phenomena were to be attributed.

But besides this, religion had another origin yet. "Men would see in waking mind glorious forms, and they would see them in sleep of yet more marvellous size of body. To these then they would attribute sense, because they seemed to move their limbs and to utter lofty words suitable to their glorious aspect and surpassing powers. And they would give them life everlasting, because their face would ever appear before them, and their form abide; and because they could not believe that beings possessed of such powers would lightly be overcome by any force; and they would be pre-eminent in bliss, because none of them was ever troubled with the fear of death, and because at the same time, in sleep, they would see them perform many miracles, yet feel, on their part, no fatigue from the effort."

The meaning of this singular passage will be explained if we remember the theory of wandering films, or images, which has been described already, and will lead us up to Lucretius's theology, with which we may fitly close our account of his scientific system.

The glorious forms just alluded to are nothing but wandering films,—some of the finer sort, only perceived by the mind; some of the coarser sort, that excite vision. What, then, was their origin? They are not things that have no such counterpart. They have been thrown off by actual bodies. But by what bodies? By the bodies of a certain race of beings which, with a certain amount of fitness, may be called

gods, as being superior in happiness and in beauty to ourselves, but who have no care or power over us or over the universe ; and who are just as much a product of the collision of atoms as it or we. These beings dwell in the spaces between the various worlds or universes,—though how they can breathe there, or what they can rest on, or subsist on, or do to promote their supposed enjoyment, or what shape the world can be that they inhabit, Lucretius does not tell us. There, however, he suffers them to exist,—a gratuitous superstition it must seem to us—a surviving rudiment of a former system, answering no purpose in his own, and only introducing into it incongruity and difficulty. And not only does he suffer these gods to exist, but some of the films thrown off by their bodies to wander hither into this world of ours, and to delude those that see them into supposing them to be the actual personal presence of powers that guide and have formed the universe.

We have now ended our survey of the scientific system that Lucretius wished to expound, and to enforce upon the world. We will now go on to take a survey of the poem itself, which he thought the fittest form in which to embody it ; and we shall then see not only how he handled in verse a thing so refractory as his main subject, but what were the sort of uses he designed the explanation of it to subserve, and his views of that human life and nature which he was so anxious that his discoveries should illuminate.

CHAPTER

THE POEM OF LUCRETIUS.

Ay, but I meant not thee ; I meant not her,
Whom all the pines of Ida shook to see
Slide from that quiet heaven of hers, and tempt
The Trojan, while his neat-herds were abroad ;
Nor her that o'er her wounded hunter wept
Her Deity false in human-amorous tears ;
Nor whom her beardless apple-arbiter
Decided fairest. Rather, O ye Gods,
Poet-like, as the great Sicilian called
Calliope to grace his golden verse—
Ay, and this Kypris also—did I take
That popular name of thine to shadow forth
The all-generating powers and gemal heat
Of Nature, when she strikes through the thick blood
Of cattie, and light is large, and lambs are glad
Nosing the mother's udder, and the bird
Makes his heart voice amid the blaze of flowers :
Which things appear the work of mighty Gods.”

—TENNYSON, “*Lucretius*.”

BOOK I.

The poem thus begins :—

“ Mother and mistress of the Roman race,
Pleasure of gods and men, O fostering
Venus, whose presence breathes in every place,
Peopling all soils whence fruits and grasses spring,

And all the water's navigable ways,

Water and earth and air and everything,
Since by thy power alone their life is given
To all beneath the sliding signs of heaven;

Goddess, thou comest, and the clouds before thee

Melt, and the ruffian blasts take flight and fly ;
The dædal lands, they know thee and adore thee,
And clothe themselves with sweet flowers instantly ;
Whilst pouring down its largest radiance o'er thee,
In azure calm subsides the rounded sky,
To overarch thine advent ; and for thee
A livelier sunlight laughs along the sea.

For lo, no sooner come the soft and glowing

Days of the spring, and all the air is stirred
With amorous breaths of zephyr freshly blowing,
Than the first prelude of thy power is heard
On all sides, in aerial music flowing
Out of the bill of every pairing bird ;
And every songster feels, on every tree,
Its small heart pulsing with the power of thee.

Next the herds feel thee ; and the wild fleet races

Bound o'er the fields, that smile in the bright weather,
And swim the streaming floods in fordless places,
Led by thy chain, and captive in thy tether.
At last through seas and hills, thine influence passes,
Through field and flood and all the world together,
And the birds' leafy homes ; and thou dost fire
Each to renew his kind with sweet desire.

Wherefore, since thou, O lady, only thou

Art she who guides the world upon its way ;
Nor can aught rise without thee anyhow
Up into the clear borders of the day,

Neither can aught without thee ever grow
Lovely and sweet—to thee, to thee I pray—
Aid and be near thy suppliant as he sings
Of nature and the secret ways of things."

For I have set myself, he goes on, to expound these as best I may to my dear friend, the son of the Memmii, in this very poem ; and for my affection to him, I would have every charm given to my verses. And do thou, my Memmius, so far as thou canst in these present troublous times, give an attentive ear to me, for I am going to explain to you the whole system of things ; and out of what first elements the world, and men, and gods have all alike arisen. I have a teacher—Epicurus—who has explained all these things to me ; and his teachings when first given to men made a new era in their history.

"When human life, a shame to human eyes,
Lay sprawling in the mire in foul estate,
A cowering thing without the strength to rise,
Held down by fell Religion's heavy weight—
Religion scowling downward from the skies,
With hideous head, and vigilant eyes of hate—
First did a man of Greece presume to raise
His brows, and give the monster gaze for gaze.

Him not the tales of all the gods in heaven,
Nor the heaven's lightnings, nor the menacing roar
Of thunder daunted. He was only driven,
By these vain vauntings, to desire the more
To burst through Nature's gates, and rive the unriven
Bars. And he gained the day ; and, conqueror,
His spirit broke beyond our world, and past
Its flaming walls, and fathomed all the vast.

And back returning, crowned with victory, he
Divulged of things the hidden mysteries,
Laying quite bare what can and cannot be,
How to each force is set strong boundaries,
How no power raves unchained, and nought is free.
So the times change ; and now religion lies
Trampled by us ; and unto us 'tis given
Fearless with level gaze to scan the heaven.

Yet fear I lest thou haply deem that thus
We sin, and enter wicked ways of reason.
Whereas 'gainst all things good and beauteous
'Tis oft religion does the foulest treason.
Has not the tale of Aulis come to us,
And those great chiefs who, in the windless season,
Bade young Iphianassa's form be laid
Upon the altar of the Trivian maid ?

Soon as the fillet round her virgin hair
Fell in its equal lengths down either cheek,—
Soon as she saw her father standing there,
Sad, by the altar, without power to speak,
And at his side the murderous minister,
Hiding the knife, and many a faithful Greek
Weeping—her knees grew weak, and with no sound
She sank, in speechless terror, on the ground.

But nought availed it in that hour accurst
To save the maid from such a doom as this,
That her lips were the baby lips that first
Called the king father with their cries and kiss.
For round her came the strong men, and none durst
Refuse to do what cruel part was his ;
So silently they raised her up, and bore her,
All quivering, to the deadly shrine before her.

And as they bore her, ne'er a golden lyre
Rang round her coming with a bridal strain;
But in the very season of desire,
A stainless maiden, amid bloody stain,
She died—a victim felled by its own sire—
That so the ships the wished-for wind might gain,
And air puff out their canvas. Learn thou, then,
To what damned deeds religion urges men."

Yes (Lucretius continues), and you too, Memmius, even you, will some time or other seek to fall away, and cower under the terrors of this false religion. And, indeed, what safeguard have you? How will you steel yourself against the terrors of the priests, who have ever a life to come with which to threaten you, and in which torments everlasting may, as they say, be yours? Did you know that death was death indeed, then you might keep a stout heart, and brave them. But now what do men know of the soul? They know neither its nature nor its origin—neither whence it came nor whither it is going. How shall they know, then, what may not be in store for it? What shall we do then? Our only hope is in this. Let us grasp first the principles of things; let us learn by what laws the stars and the sun move; how the earth was formed, and how all things live and grow upon it. And above all, let us find out by reason what the soul and mind consists of, and what are the laws of those things whence all our fears arise—imagination, and dreams, and madness.

Hard it is in Latin verses to expound the teachings of the Greeks. Our tongue is poor and wanting. No

one has used it yet to treat such themes as these. And yet for your sake, and the pleasure of your sweet friendship, I will not be daunted. I will essay to do my best.

This darkness, then, this terrible darkness, in which the human race is at present cowering, can be dispelled, not by any sunlight, nor the lucid darts of day, but by the aspect and the law of Nature—

“For fear takes hold upon the human breast,
When we see many things by Nature done,
Whereof the ways and means are known to none.”

And accordingly we ascribe these phenomena to the gods. One thing, therefore, at starting, I will tell you first—how that nothing can be produced from nothing. And when you are once made certain of that, you shall see clearly how all things can be produced and done without the hand of gods.

Lucretius then goes on, in the next two hundred verses, to explain that the elements of all things are atoms and void, supporting his theory by arguments that have been described already. Atoms and void are both alike eternal. All composite things may pass away, but these remain from everlasting. Nothing can be born from nothing; and nothing, when born, can go back to nothing :—

“Things seem to die, but die not. The spring showers
Die on the bosom of the motherly earth,
But rise again in fruits and leaves and flowers,
And every death is nothing but a birth.”

Atoms, then, and empty space, he goes on—these, my friends, are all that really is. You can name nothing that is not a property of these, or else an accident :—

“ That is a property which cannot be
 Disjoined from a thing and separate
 Without the said thing’s death. Fluidity
 Is thus a property of water ; weight
 Is of a stone. Whilst riches, poverty,
 Slavery, freedom, concord, war and hate,
 Which change, and not inhere in things of sense,
 We name not properties, but accidents.”

The Trojan war, for instance, was simply an accident of atoms and empty space ; nor, but for these, would it ever have come to pass—

“ For had things no material substance thus,
 Nor void to move in, never had the fire
 Out of the fairest child of Tyndarus
 Lit in the Phrygian’s breast the fell desire,
 And put the torch to war ; nor Pergamus
 Had seen the dumb and lifeless steed draw nigh her,
 Out of whose flanks the midnight warriors came,
 Who ended all, and wrapt the towers in flame.”

Remember then, I again tell you, that here are the two things that alone really are, infinite space and atoms — atoms indivisible, indestructible, that have endured, and that will endure for ever. Wherefore, they who held fire to be the one substance of things, and the sum to have been formed out of fire alone, are, of all philosophers, furthest from the truth. Chief of

this band is Heraclitus, a declarer of dark sentences, and a juggler with words.

“ More famous he with babbling men and vain,
Amongst the Greeks, than those that strive to know
The truth indeed. For fools are always fain
To measure meanings by the gaudy show
Of twisted words that hide them. And a strain
That fills their ears with honeyed overflow
Of phrase and music, is at once decreed
Surely to hold the very truth indeed.”

Lucretius then goes on to give the reasons why the theory of Heraclitus is untenable, and how it contradicts the very premises that he himself starts with. Nor any wiser are those who hold that things have four first beginnings, though some of those who have taught this, have been wise—wise above measure in other ways.

“ Chief of these
Is he of Agrigent, Empedocles.

Him in its three-shored bounds that isle of yore
Reared, which the wild Ionian water laves,
Round curving bays and headlands, evermore
Splashing the brine up out of its green waves.
Here does the racing sea withhold the shore
Of Italy; and here Charybdis raves;
And here does rumbling Ætna moan and strain
For strength to lighten at the skies again.

Fair is that land, and all men hold it fair;
Its sons who guard its soil are fierce and free,
And all rich things, and gladsome things are there,
Yet nothing ever was there, nor shall be,

More glorious than this great philosopher—
 More holy, marvellous, and dear than he:
 Yea, and with such a strength his mighty line
 Shouts through the earth—he seems a voice divine."

And yet, says Lucretius, in spite of all this, he has gone astray about the first beginnings of things, as did also Anaxagoras and all the rest, partly from their wrong conceptions of matter, partly because they denied the reality of empty space. And all these faults of theirs he points out in a way that we have already analysed.

And now mark (he goes on) what remains to be known, and hear it more distinctly. For my mind does not fail to perceive how dark these things are; but yet, despite all difficulties—

" Yet my heart smarting with desire for praise,
 Me urges on to sing of themes like these,
 And that great longing to pour forth my lays
 Constrains me, and the loved Pierides,
 Whose pathless mountain-haunts I now explore,
 And glades where no man's foot has fallen before.

Ah sweet, ah sweet, to approach the untainted springs,
 And quaff the virgin waters cool and clear,
 And cull the flowers that have been unknown things
 To all men heretofore! and yet more dear
 When mine shall be the adventurous hand that brings
 A crown for mine own brows, from places where
 The Muse has deigned to grant a crown for none,
 Save for my favoured brows, and mine alone."

am I vain, Memmius, in such vaunts as these; for
 I am struggling to teach great things, and to release

the human mind from the fetters of religious fear ; and dark as my subject is, my song is clear and lucid, and over the crabbed things I teach, I lay the Muses' charm.

And now thus far I have taught you how solid bodies of matter fly about ever unvanquished through all time. I have next another thing to teach you. I must show you there is no limit to the sum of these atoms, and likewise that there is no limit to the space they move in. As to space, I need but ask you, how can that be bounded ? For whatever bounds it, that thing must itself be bounded likewise ; and to this bounding thing there must be a bound again, and so on for ever and ever throughout all immensity. Suppose, however, for a moment, all existing space to be bounded, and that a man runs forward to the uttermost borders, and stands upon the last verge of things, and then hurls forward a winged javelin,—suppose you that the dart, when hurled by the vivid force, shall take its way to the point the darter aimed at, or that something will take its stand in the path of its flight, and arrest it ? For one or other of these things must happen. There is a dilemma here that you never can escape from. Place your limit of things as far away as it shall please you, I will dog your steps till you have come to the utmost borders, and I will ask you what then becomes of your javelin. Surely you must see what the end of this must be :—

“ The air bounds off the hills, the hills the air ;
Earth bounds the ocean, ocean bounds the lands ;
But the unbounded All is everywhere.”

Lucretius here adds various other proofs of the infinity of empty space, and the infinite number of the atoms, all of which have been already stated. Such then, he exclaims, again reiterating his teaching—

“Such is the nature then of empty space,
The void above, beneath us, and around,
That not the thunderbolt with pauseless pace,
Hurtling for ever through the unplumbed profound
Of time, would find an ending to its race,
Or e'er grown nearer to the boundless bound.
So huge a room around, beneath, above,
Yawns, in which all things being, are and move.”

The chance to which our world owes itself needed infinite atoms for its production, infinite trials, and infinite failures, before the present combination of things arose.

“For blindly, blindly, and without design,
Did these first atoms their first meetings try;
No ordering thought was there, no will divine
To guide them; but through infinite time gone by
Tossed and tormented they essayed to join,
And clashed through the void space tempestuously,
Until at last that certain whirl began,
Which slowly formed the earth and heaven and man.”

And now my Memmius, Lucretius goes on, be far from trusting those that say all things press towards the centre, and that there are men beneath the earth, walking with their heads downwards. For the universe being infinite, how can there be any centre to it? And even grant that it had a centre, no heavy body could abide there; for everything that has weight must be for

ever and for ever falling, unless some rebound send it upwards.

Space, then, I have already proved to be infinite ; and space being infinite, matter must be infinite also ; lest, after the winged fashion of flame, the walls of the world break up suddenly, and fly along the mighty void, and the heavens fall upon the earth, and the earth break up from beneath the heaven, and the whole great universe in a single moment

“ Melt and be gone, and nothing take its place
But viewless atoms and deserted space.”

BOOK II.

The second book opens thus :—

“ ‘Tis sweet when tempests roar upon the sea
To watch from land another’s deep distress
Amongst the waves—his toil and misery :
Not that his sorrow makes our happiness,
But that some sweetness there must ever be
Watching what sorrows we do not possess :
So, too, ’tis sweet to safely view from far
Gleam o’er the plains the savage ways of war.

But sweeter far to look with purgèd eyes
Down from the battlements and topmost towers
Of learning, those high bastions of the wise,
And far below us see this world of ours,

The vain crowds wandering blindly, led by lies,
 Spending in pride and wrangling all their powers,
 So far below—the pigmy toil and strife,
 The pain and piteous rivalries of life.

O peoples miserable ! O fools and blind !
 What night you cast o'er all the days of man !
 And in that night before you and behind
 What perils prowl ! But you nor will nor can
 See that the treasure of a tranquil mind
 Is all that Nature pleads for, for this span,
 So that between our birth and grave we gain
 Some quiet pleasures, and a pause from pain.

Wherefore we see that for the body's need
 A pause from pain almost itself suffices.
 For only let our life from pain be freed,
 It oft itself with its own smile entices,
 And fills our healthy hearts with joys indeed,
 That leave us small desire for art's devices.
 Nor do we sigh for more in hours like these,
 Rich in our wealth of sweet simplicities.

What though about the halls no silent band
 Of golden boys on many a pedestal
 Dangle their hanging lamps from outstretched
 To flare along the midnight festival—
 Though on our board no priceless vessels stand,
 Nor gold nor silver fret the dazzling wall,
 Nor does the soft voluptuous air resound
 From gilded ceilings with the cithern's sound ;

The grass is ours, and sweeter sounds than these,
 As down we couch us by the babbling spring,
 And overhead we hear the branching trees
 That shade us, whisper ; and for food we bring

Only the country's simple luxuries.

Ah, sweet is this, and sweetest in the spring,
When the sun goes through all the balmy hours,
And all the green earth's lap is filled with flowers ! ”

These, Memmius, these are this life's true enjoyments ; not the seducing pleasures given by wealth and art. Will you get rid of a fever more quickly if you toss under a purple coverlet than under the blanket of a poor man ? Just then as treasures, and high birth, and the pomp of kingly power, minister nothing to the body's health, push thy thought but a small step further, and you will see they minister nothing to the mind also : unless, indeed, you find that looking on the proud array of war, and the strength of obedient legions, your mind grows and swells with a haughtier strength also, and the scruples of religion are at once scared away from it, and the fears of death grow faint, as you realise your own power and greatness. But if we see that to talk like this is folly, and that the fear of death cares nothing for human arms and armies, but that it and all other sorrows stalk menacing and unabashed through courts and palaces, and flinch nothing at the glitter of gold and purple, how can you doubt but that reason alone can daunt them ? For what is all this life of ours ? It is a struggle in the dark, and in this dark men are as children. They quake and quiver at they know not what, and start aside at objects which in the daylight they would only laugh at. Light then, more light,—this is the thing we need for the liberation of man ; but it is not outer light, it is the inner light of reason—

'Of reason searching Nature's secret way,
 •And not the sun, nor lucid darts of day.'

And now mark, and I will explain to you the motions of the bodies of matter: how things are begotten and broken up again, and with what speed they go moving through the great void. For verily in movement all things about us are, perpetually wearing away, perpetually re-begotten. Some nations wax, others wane, and in a brief space the races of living things are changed, and, like runners, hand over the lamp of life.

Here Lucretius goes on to explain more in detail the everlasting motion of the atoms, the way they strike, the way they rebound, and the ways in which they become intertwined. They move, he says, as the motes move in a sunbeam, which you may see streaming through a dark chamber, and in the apparent void mingle in the light of the rays, and, as in never-ending conflict, skirmish and give battle, combating in troops and never halting, driven about in frequent meetings and partings, so that you may guess from this what it is for first beginnings of things to be for ever tossing about in the great void. So far as it goes, a small thing may give an illustration of a great thing, and put you on the track of knowledge.

Now how swiftly these atoms move, Memmius, you may learn from this:—

"When first the morning sprinkles earth with light.
 And in the forest's lone heart everywhere
 The birds awaken, and with fluttering flight
 Pour out their flutings on the tender air;"

—at such a time we see how in a moment, in a single moment, the sun, far off though he be, darts his light through the whole creation, and clothes everything with his brightness. But the sun's rays have to travel through air, and the air retards their course ; and therefore they move slowly when compared with the atoms, which move only through pure and empty space, and which hurry on and on, not held back by anything.

But some, ignorant of the nature of matter, say that without the providence of the gods the world could not have come to be what it has, nor the seasons vary in such nice conformity to the ways of men. Wanderers they from the true course of reason. For even if I did not know what first beginnings were, I could still maintain that the earth and heaven were never the work of any divine intelligence,—so great are the defects with which they stand encumbered. All which, Memmius, I will by-and-by make clear to you ; but we will now go on to explain what is yet to be told of motions.

Lucretius now goes on to deal with the primary downward tendency of atoms, and to account for the upward courses they take, through blows and rebounds, and being squeezed upwards out of solidifying substances. Next he explains that uncertain sideways movement, which is the one respect in which the uniformity of atomic movement is broken, and which he here proclaims to be the origin, and the only possible origin, of the free-will of living beings.

Then he goes on to explain that the laws of matter have been the same for ever ; that it is the nature of

matter to be for ever moving ; and that though things seem to be now at rest, their atoms are still as unresting as they were at the beginning. Nor need you wonder at this, he says ; for when mighty legions fill in their courses all the places of the plains, in the mimicry of war, the glitter of them lifts itself up to the sky, and the whole earth about glitters with brass, and a noise is made beneath by the trampling of the mighty ones, and the mountains smitten by the shouting hurl the voices upward to the stars of heaven, and all the wheeling horsemen scour the plains, and make them tremble with the charge :—

“ Yet some place is there in the far-off hills
Whence all this storm of chargers seems to rest,
A still light brooding on the broad plain’s breast.”

~~Lucetius~~ now goes on to show that the atoms must ~~ever~~ take various shapes, the kinds of things produced by them are so different,—fluids, solids, and airs, tastes and smells. Were not the seeds of different shapes, and each special substance made of special seeds, how could the species of animals remain alike, and never vary ? or how could parent transmit to child that special something by which the two mutually recognise each other ? For this we see that even the beasts can do ; and they are just as well known to each other as human beings are.

“ Thus oft before our pillared sanctuaries,
When the lit altars lift their fragrant blaze,
A calf pours forth its warm life’s blood, and dies ;
But she, the mother, in her lone amaze

Goes through the fields, and still can recognise
 Her own one's cloven footfalls in the ways,
 And looks to find it, and her eyes grow wild
 With wondering for her unreturning child.

Then from her mouth breaks forth the desolate moan
 Through all the leafy groves, and she gives o'er
 Her search, only she oft goes back alone
 To that bleak stall her child shall know no more ;
 Nor tender willows, nor lush grasses grown
 Sweet with the dew-fall, nor clear streams that pour
 With brimming lips their waves along the plain,
 Can tempt her mouth, nor ease her breast of pain."

Remember then, says Lucretius, that the atoms have various shapes; but the number of such shapes is finite, though of atoms of each shape the number must be infinite: for since the difference of shape is finite, those which are like are infinite, or the sum of matter will be finite. All this he draws out at length, urging all the arguments that have been described already.

And thus, he says, out of infinite matter, and through infinite space, things as they are continue, for ever being destroyed and for ever again renewed; nor can death-dealing motions keep the mastery always, nor entomb existence for evermore, nor, on the other hand, can the birth and increase-giving motions of things preserve them always after they are born.

"Thus from the depths of all eternity
 The unwearying atoms wage a dubious war;
 And now with surging life doth victory lie,
 And now anon is death the conqueror;

And with the funeral wail, the baby's cry
Blends, as it opes its eyes on daylight's shore :
Nor ever morning broke that failed to hear
The infant's bleatings and the mourner's tear."

And herein, Memmius, it is most fit you should remember that there is nothing that is known by sense that consists of one kind of seed ; all is formed by a mixture of divers atoms. And when a thing has many properties, you must know it is a compound of seeds of many shapes. Such a compound is the great earth we live on, for her properties, as we can all see, are many. For she brings forth fires, and the great seas, and crops, and joyous trees, and the bodies of living things. Wherefore, of gods, and men, and beasts, she alone has been named the mother. Of her the Greek poets sang, that, borne on her towering chariot, she comes driving a yoke of lions. They have yoked to her car the beasts, to show that nature, however savage, should be softened by the care of parents. They have crowned her head with a mural crown, because, fortified in strong positions, she sustains cities. Phrygian bands escort her, for in Phrygia the story is that the first corn grew ; and Galli, too, are her guardians, to show that they who have done violence to the divinity of the mother, are unworthy to bring a living offspring to the daylight.

" The tight-stretched timbrels thunder round her way,
The sounding cymbals clash, and cry Prepare !
The threatening horns with hoarser music bray,
And hollow pipes are loud upon the air ;

And swords are borne before her, sharp to slay—
 Emblems of rage to thankless souls that dare
 Neglect the Queen ; till holy fear has birth
 Of the great Mother over all the earth.

Therefore when first she slowly comes progressing
 Through mighty cities, and with soundless tongue
 Breathes over men the dumb unworded blessing,
 Down in her path are brass and silver flung,
 A bounteous largess, mortal thanks expressing ;
 And flowers are showered by all the adoring throng,
 Till on the Mother and her train there falls
 A snowstorm of soft-settling rose-petals.”

But all this escort and progress are only symbolism. It is beautifully told and well set forth, but it is very far removed from true reason. For the nature of the gods must enjoy supreme repose, and know neither care nor labour ; for no pain mars it, nor can aught we do appease it or make it angry. And if any one choose to call the sea Neptune, and corn Ceres, and would rather use the word Bacchus than the word wine, let us suffer him to say in this sense that the earth is mother of gods, if he only forbears in earnest to sully his soul with the stain of foul religion.

“ For all this while the earth is blind and dumb,
 It neither knows, nor thinks, nor hears, nor feels,
 But blindly in it various seeds unite,
 And blindly these break forth, and reach the light.”

But though all things, Lucretius goes on, are composed of many seeds, it is evident that these combinations follow some laws, and only certain set combinations are possible by the nature of things. The

uniformity of nature shows us this ; and you may learn it, too, from considering what the atoms are themselves. You must know, too, that first beginnings have themselves no sensible qualities. In especial, you must remember that they are without colour. Lucretius gives many reasons for this,—more particularly, that colour cannot exist without light, and that it varies according to what way the light falls upon it.

“ After this fashion does the ringdove’s down
Change in the sun, and shift its plumpy sheen ;
Now all a poppy’s dark vermillion,
Now coral, glimmering over emerald green.
So too the peacock, saturate with sun
O’er all its sweep of trailing tail, is seen
To quiver in the light with varying dyes,
And all the hues inconstant in its eyes.”

And now Lucretius goes on with his reasons why atoms cannot have either voice, or smell, or sense, or any sensible qualities whatsoever. Life has arisen out of the lifeless, as we see even now worms arising out of clods, though in the case of the higher animals the lifeless matter has to go through many stages ; and only through special combinations of circumstances can it at last break forth into life and consciousness. But if any one shall say that sense may be so far begotten out of no-sensation, by a process of change, or by a kind of birth, all we have to show to such a man is, that this change and birth can only happen in obedience to fixed laws, and under fixed conditions. Above all, the senses cannot exist in any body, till the living nature of that body has been begotten ; for till then,

the atoms that will make up the principles of life and feeling are wandering far and wide—in air and earth, in flowers and trees and rivers. Common-sense will tell you that all this must be so. For did the atoms live, what then? Think of the picture you would have to form of them.

“Sure, had they life, these seeds of things, why then
 Each separate particle would laugh and cry
 By its small self, and speculate like men—
 ‘What were my own first seeds, and whence am I?’”

Wherefore be assured, Memmius, that we have all arisen out of lifeless things—

“And learn
 That what of us was taken from the dust
 Will surely one day to the dust return ;
 And what the air has lent us, heaven will bear
 Away, and render back its own to air.”

For death is not an extinction of matter,—it is a change and a dissolution only. The atoms are like the letters of an alphabet, for ever shifting their places, and clustering into new words, and these words again clustering into new verses.

And now, we entreat you, apply your mind to reason. For a new matter struggles earnestly to gain your ears; and remember this, that the simplest thing, if new, is at first hard to be realised; and the hardest thing grows easy when we have known it long enough.

“Lift up your eyes, consider the blue sky,
 And all the multitudes of wandering signs
 It holds within its hollows; mark on high
 How shines the sun, and how the clear moon shines.

Supposing this great vision suddenly
• Broke on the gaze of man, my soul divines
That to the astonished nations it would seem
A mist, a fancy, a desire, a dream."

And yet how little, it is so familiar, do we now heed it! Wonder not, therefore, if I lead your spirit on a farther and a more adventurous voyage, and carry you past the walls of heaven and the bounding blue, and show you what is there, far yonder, in the bottomless unplumbed depths, to which the spirit ever yearns to look forward, and to which the mind's inner self reaches in free and unhindered flight. There then, in the space beyond, where the atoms are for ever flying, are other worlds than ours, woven as ours was out of flying atoms, and the blind clash of them. Our universe is but one out of a countless number. As a man is but one amongst many men, so is our universe but one amongst many universes. And through all these runs a single law. They have risen in the same way, they are sustained in the same way; and in the same way, and by a like necessity, they will all one day perish. Do but realise this, and the whole scheme of things will grow clearer to you, and you will see how—

" Rid of her haughty masters, straight with ease
Does nature work, and willingly sustains
Her frame, and asks no aid of deities.
For of those holy gods who haunt the plains
Of Ether, and for aye abide in peace,
I ask, could such as they are hold the reins
Of all the worlds, or in their courses keep
The forces of the immeasurable deep?

Whose are the hands could make the stars to roll
Through all their courses, and the fruitful clod
Foster the while with sunlight, always whole,
A multiplied but undivided god ;
And strike with bellowing thunders from the pole,
Now his own temples, now the unbending sod ;
And now in deserts those vain lightnings try
That strike the pure, and pass the guilty by ? ”

And this too, Memmius, you must know as well. Each of these countless universes has grown from small to greater, and the bulk of them has been added to by seeds dropped down upon them out of the boundless space ; and, in like manner, they are diminished and divided, for their seeds get loose, and the boundless space receives them back again. And as plants and animals are born, increase in stature and in strength, and then wax old and die, so is it with the worlds also. And this world of ours, as many a sign shows us, is now well stricken in years, and the time of its dissolution is drawing nigh. With each return of its seasons its strength gets more feeble. Once goodly crops and grasses sprang from the teeming soil without labour. Now, labour as we will, but a scant reward is yielded. And now the aged ploughman shakes his head, and sighs to think of the earth’s exuberance in the days when he was young. And the sorrowful planter complains of his shrivelled vines, and wearies heaven with his prayers, and comprehends not that all things are gradually wasting away, and passing to the grave, quite worn out by age and length of days.

BOOK III.

Lucretius opens this book with an invocation to Epicurus, his revered master :—

“Thou who wert first in drowning depths of night
 To lift aloft so clear a lamp, whose rays
 Strike along life, and put the shades to flight—
 Thee, thee, chief glory of the Grecian race,
 I strive to follow, humbly and aright,
 And my feet in thy very footprints place;
 Not that thy rival I would dare to be,
 But that I love, and loving follow thee.

Thy rival ! Nay ; can swallows rival swans ?
 Or thunder-footed steeds competitors
 Find 'mongst the she-goat's gamb'ling little ones ?
 Oh, first and best of all discoverers,
 We are but bees along the flowery lawns,
 Who rifle for our food thy fields of verse,
 And on thy golden maxims pause and prey—
 All-gold, and worthy to endure for aye.

For lo ! no sooner does thy powerful line
 Loud through the world the scheme of Nature sing,
 Than the mind hears, and at that note of thine
 Its flocks of phantom terrors take to wing.
 The world's walls roll apart, and I divine
 With opened eyes the ways of everything,
 And how through Nature's void immensity
 Things were not, were, and are, and cease to be.

And lo ! the gods appear, the immortal races,
 Visible in the lucent windless air
 That fills their quiet blest abiding-places,
 Which never noisy storm nor storm-clouds dare

To trouble, where the frost's tooth leaves no traces,
And downwards no white falling snowflakes fare,
But on their lips the laughers never cease,
Nor want nor pain invades their ageless peace.

But on the other hand we search in vain,
For those swart forms, the fearful deities
Of Hell. Our vision roams the whole inane,
But aught like Acheron it nowhere sees.
And I, when I to this high view attain,
Feel on my soul a maddening rapture seize,
And next a trembling, that thy hand should dare
Thus to the quick to lay all Nature bare."

And now, says Lucretius, since I have shown what atoms are, their number, their shape, and their motions, and how all things can be produced out of them, I will next reveal the nature of the mind and soul, that the dream of Acheron may be once and for all dispelled, which at present troubles life to its inmost depth, casts a chill and deathly shade over our whole existence, and leaves a taint and a bitterness in every pleasure. True it is that we often hear men vaunt that they have no fear of death, and that the ills and hardships of life are all they really flinch from. But these are merely boasters. Bring them into any trouble or danger, and you will see how they betake themselves to their knees, whining to their gods, and forgetful of all their bravery. Such fearless firmness as these men feign to have, can be given only by knowledge and calm reason. Listen to me, then, and I will lead you to it:—

"First, then, I say the mind, which often we
Call also understanding, wherein dwells

The power that rules our whole vitality,
Is part of man, as is whatever else
Goes to make up his frame, as hands, feet, knees;
Nor is it, as a foolish Greek school tells,
A harmony of all the members, spread
As health is, everywhere from feet to head."

But it resides in one particular place, just as sight, hearing, and smell do. Lucretius here goes on in detail to explain the nature of the mind, how it is connected with the vital soul, and how the two are connected with the body, how they govern it and are contained by it, how the former is seated in the heart, and how the latter pervades the whole frame. He then describes how the mind touches the soul and moves it, and how the soul in its turn touches the body; and from this he argues that they must of necessity be corporeal, for where there is no corporeality, there is no touch. With first beginnings, then, he says, interlaced from their earliest birth, are mind and body fashioned, and gifted with a life of joint partnership; and it is plain that the faculty of the body and of the mind cannot feel separately, each alone without the power of the other, but sense is kindled throughout our flesh and blown into a flame between the two, by joint motions on the part of both.

And now (he goes on) I will show you that mind and soul are mortal; and in what I have now to say, remember that I still use the words mind and soul indifferently, and that what I say of the one will apply in the same way to the other, since both make up one thing, and are one single substance. First of all,

then, remember of how fine a substance I have shown the soul to be, and how far more sensitive than any other thing,—

“ More than a drifting smoke, or ductile river ;
For even shapes of mists and smoke in dreams,
Soon as they touch the mind will make it quiver,
As when in sleep the votive altar steams
Before our sight ; for even dreams like these
Come from the touch of films and images.”

Well, then, since you see that water is scattered when the vessel that held it is broken, and the mists melt away into the air, how can you doubt that the soul will one day do likewise when its body goes to pieces ? Again, we see that the mind is born with the body, grows strong with the body, and also with the body once more grows frail and feeble :—

“ It follows then that when this life is past,
It goes an outcast from the body’s door,
And dies like smoke along the driving blast.
We with the flesh beheld it born and rise
To strength ; and with the flesh it fades and dies.”

And now consider this too. The body is subject to many diseases, and with many of these the soul is affected also. Often the reason wanders, often the reason is for a time quite slain. Such loss of reason comes from the powers of the mind and soul being dissevered, and riven and forced asunder by the same baneful malady as the body is. What shall we think then ?—

“Even in the body thus the soul is troubled,
And scarce can hold its fluttering frame together;
How should it live then, when, with force redoubled,
Naked it feels the air and angry weather ?”

Again, Lucretius goes on (after having added a number of other arguments which have been already given in a former chapter), seeds of the soul are evidently left in the body after death, because worms and living things are bred out of it. And a soul that can be thus divided cannot be immortal. For it is impossible to think that each of these worms has an immortal soul of its own, that immediately at the birth of its body makes its way into it, and that thus many thousands of souls meet together in a place from which one has been withdrawn, and either find bodies ready made for them, or set each about making a body for itself. This is glaringly absurd :—

“For why should souls, if they can cast away
Their mortal carcasses, and still live on,
Thus toil to build themselves a den of clay?
Since when with bodies they are clothed upon
They straight grow heirs to sickness and decay,
And through them all the body's grief has gone.
Nor for themselves could souls contrive to build
Such prison-pens, how much soe'er they willed.”

Lucretius here brings forward several other arguments, and then he once more thus returns to this one :—

“Again, when creatures' bodies are preparing,
Sure we should laugh to see the souls stand by—
Bands of immortals at each other glaring
About that mortal house in rivalry,

Each longing he may be the first to fare in,
And each braced up to push his best and try. *Unless they settle it on this condition,
That who comes first shall have the first admission."

Again, if more arguments are still needed, for every-
thing there is a fixed place appointed ; nor do fishes
live in the land, trees in the clouds, nor the sap of trees
in stones. And thus the nature of mind cannot come
into being without the body, nor exist away from it.
And therefore, when the body has died, we must ad-
mit that the soul is perished. Every argument points
to this conclusion. We cannot doubt it ; we cannot
escape from it. Analogy, observation, and common-
sense, all point the same way, and confirm us in a
complete certitude :—

" Death is for us then but a noise and name,
Since the mind dies, and hurts us not a jot ;
And as in bygone times when Carthage came
To battle, we and ours were troubled not,
Nor heeded though the whole earth's shuddering frame
Reeled with the stamp of armies, and the lot
Of things was doubtful, to which lords should fall
The land and seas and all the rule of all ;

So, too, when we and ours shall be no more,
And there has come the eternal separation
Of flesh and spirit, which, conjoined before,
Made us ourselves, there will be no sensation ;
We should not hear were all the world at war ;
Nor shall we, in its last dilapidation,
When the heavens fall, and earth's foundations flee.
We shall nor feel, nor hear, nor know, nor see."

And even—if for a moment we may imagine the impossible—even should the soul still survive the body, what is that to us? For we are neither soul nor body, but we are a single being fashioned out of the wedlock of the two. Nor, again, if time should gather up our matter after death, and again remould it into the very beings we now are, that is nothing to us, when once the chain of our consciousness has been snapped asunder. Perhaps we may have existed before: that gives us no sorrow. Suppose we can exist again: this need give us no more trouble than that.

Therefore, when you see a man bemoaning his hard case, that after death his body will either rot in the grave, or be consumed by fire, or be torn by wild beasts, the sound his mouth gives forth betrays a flaw somewhere. He does not really grant the conclusion he professes to grant. He has not with his whole mind realised that he will wholly die. The inveterate fancy still clings to him that there will still be a surviving something, that living will lament about its own death:—

“ Perplexed he argues, from the fallacy
 Of that surviving self not wholly freed.
Hence he bewails his bitter doom—to die;
 Nor does he see that when he dies indeed,
No second he will still remain to cry,
 Watching its own cold body burn or bleed.
O fool! to fear the wild-beast’s ravening claw,
 Or that torn burial of its mouth and maw.

For lo! if this be fearful, let me learn
 Is it more fearful than if friends should place

Thy decent limbs upon the pyre and burn
 Sweet frankincense ? or smother up thy face
 With honey in the balm-containing urn ?
 Or if you merely lay beneath the rays
 Of heaven on some cold rock ? or damp and cold
 If on thine eyelids lay a load of mould ?

' Thou not again shalt see thy dear home's door,
 Nor thy dear wife and children come to throw
 Their arms round thee, and ask for kisses more,
 And through thy heart make quiet comfort go :
 Out of thy hands hath slipped the precious store
 Thou hoardedst for thine own,' men say, 'and lo,
 All thou desired is gone !' but never say,
 'All the desire as well hath passed away.'

Ah ! could they only see this, and could borrow
 True words, to tell what things in death abide thee !
 ' Thou shalt lie soothed in sleep that knows no
 morrow,
 Nor ever cark nor care again betide thee :
 Friend, thou wilt say thy long good-bye to sorrow,
 And ours will be the pangs, who weep beside thee,
 And watch thy dear familiar body burn,
 And leave us but the ashes and the urn.'"

Often, too, at feasts men say, as they drink, and wreath their garlands round them, " Miserable creatures that we are ! our joys are short ; they will soon be part and parcel of the past, and the past never gives its own back again." As if after death they would ever know thirst, and be pining for the wine-cup that will never more be allowed them !

Once more, could Nature only speak to us, how would she deride us foolish mortals and reprove us !

"Fools," she would say, "and sickly sorrowers! why bemoan and wail for death in this wise? For say thy past life has been welcome to thee, and all its joys have not been given in vain, passing through thee like a leaky vessel that refuses to be filled—say thou hast had thy will and thy fill of living:—

"Why not rise up then, like a sated guest,
And enter, fool, upon thy dreamless rest?"

But if, on the contrary, life has been a sorrow to thee, and all the blessings that have been thine thou hast squandered, why seek to re-begin the weary round, and to gather what again thou wilt waste and squander as before? For hope not to find anything new. There is no other pleasure that I can contrive or discover for thee.

"For though thy life be fresh within thy frame,
Nor years have yet thy bodily strength abated,
You would find all things alway still the same,
Nor e'er discover one thing new created—
Not shouldst thou live till all men's lives be done,
For there is no new thing beneath the sun."

Think, too, of the bygone antiquity of the everlasting time before our birth, how that was nothing to us. For nature holds up to us the time that was before us, as a vision of the future time that is to come after us.

"Look in the glass then. Say what shape is there?
Appears there aught of terrible or sad?
Does not the image that you gaze at seem
Even gentler than a sleep without a dream."

Sure enough, however, the terrors men dread after death are not all vain imaginings. Birds truly eat a way into Tityos ; Sisyphus rolls his stone up-hill for ever. But he is a Tityos, who, as he grovels in lust, is eaten up by anguish like a vulture ; and he is a Sisyphus who is for ever asking honours of the people, and is for ever going back disappointed. The torments that we dreamed of in the future have their real being here, and men inflict them on themselves, in this very life around us.

Ah ! might men only see the real cause of their sorrows, how salvation would then dawn on them ! The man who is sick of home hurries forth from his lordly porticos, and then, again, hurries back, finding he is no better off abroad. In the town he says, Ah, would I were in the country ! and in the country, Ah, would I were in the town ! and to and fro between the two he goes hurrying in his chariot, and at each end of his journey he can do nothing but yawn for weariness. In this way each man flies from himself, but can never for a moment escape ; and he hates himself, being sick with an unknown malady. But could he only see the matter rightly, leaving all else, he would study the nature of things ; and learning that certain extinction and death is the end of all, would learn so to order his life accordingly.

BOOK IV.

And now, says Lucretius, since I have shown you what mind and soul is, and how life is born with this body, and dies with the body's death, I will go on to explain to you a matter of the utmost moment; I will show you how we see, and feel, and taste, and how our life is connected with and knows the external world. And hard though the subject be, I will make it sweet to you, overlaying all its bitterness with the sweet honey of the Muses.

He now goes on to explain how films and images are perpetually streaming off the surface of things, and illustrates this by many analogies. For without doubt, he says, we see many things freely giving such discharge, not from the centre only, but from the outer surface itself.

“ This daily happens, when the sunlight gleams
Through those broad awnings, yellow, red, and blue,
Which flap and flutter on their poles and beams
Over great theatres : for there you view
How from their surface down their colour streams,
And how they make to flicker with their hue
The curving crowd, and all the scene’s recesses,
And the grave fathers in their stately dresses.

And all the more the narrowing walls around
Make of the theatre a well of night,
So much more gaily do the colours bound,
And every object laughs with wayward light.”

And therefore, he says, since sheets of canvas dis-

charge colour from their surface, all things will naturally discharge their pictures too—since, in each case alike they are sent forth from the surface. Nor are you to suppose that only those images are going through the air, which are thus sent off the surface of things. There are other images, with no counterparts, which spontaneously beget and fashion themselves, as clouds do, and wander along as clouds do, with ever-varying and inconstant shape. For the clouds in this way we can see continually

“Fanning the air, and, gathering form on high,
Blot out the blue, and violate the sky;

Then through the air in shifting shapes are born:
Now see we monstrous giants hurrying past,
Who trail behind them lengths of shade forlorn;
And now great mountains move along the blast,
And crags and boulders from the mountains torn,
By which the sun’s dimmed face is overcast;
And now some mighty beast comes on amain
With packs of other storm-clouds in its train.”

And now I will go on to show with what ease and celerity the images or idols that I spoke of are begotten, and how incessantly they flow and fall away from things. Hereupon he explains more minutely the nature of these emanations, how fine their substance is, and consequently with what swiftness they are capable of moving:—

“For we observe that things of little weight
Are ever swift to move, of the which kind
The sunlight is, which does not hesitate,

Ever pressed on by fresh light from behind,
To force its way, and nimbly penetrate
Through all the space of air."

And these idols or images of things are in their movements as swift as sunlight, and can pass through air as readily,—nay, they must be even swifter; for the stars are farther from us than the sun, and yet

“No sooner is the shine of water spread
In the night air, beneath heaven’s glittering plain,
Than instantly to every star o’erhead
A star within the wave responds again.”

Therefore, again and again, I repeat, you must admit that bodies, capable of striking the eyes and provoking vision, are constantly travelling through the air with a marvellous velocity. But because we can see with the eyes alone, the consequence is, that to whatever point we turn our sight, then all the same things meet and strike us with their shape and colour. Lucretius now goes on to explain the manner in which we infer the distance of things, and then the action of mirrors, and the real nature of the reflection in them. He then passes to optical delusions, and the various ways in which it seems that our eyes deceive us:—

“Now for this cause the far towers of a town
Reach us as round, when they indeed are square;
The angles of their films are quite worn down
In drifting towards us through the length of air;
And when they meet us, those strong things of stone
Seem smooth and circular, as though they were
Turned in a lathe; but vaguely thus appear,
And like a shadowy sketch of round things near.”

And there are numberless other like cases as well, but they can be all explained satisfactorily, and we must never for a moment admit that our eyes deceive us. The frailty, the sense of deception, is really in the mind. Do but think of the following instances, and you will see that this is so :—

“The ship in which we sail seems standing still,
The ship that rides at anchor drifting by ;
And, as we hold to seaward, field and hill
Seem to drop far astern ; and in the sky
The stars we steer by seem immovable,
And yet go moving on assiduously,
Since each clear body has its hour to rise,
And its long road to rest across the skies.

And as we watch the sun and moon, their light
Seems also fixed, yet still moves on we know :
And when on deck we watch with straining sight,
Up from the sea-line shadowy mountains go,
Into one solid isle their shapes unite,
And yet we know huge straits between them flow,
And ways for fleets. And giddy children view,
When they stop turning, all things turning too.”

So, too, the sun seems near us when it rises, and yet illimitable lands and seas and unknown people lie between. A puddle of not a finger’s depth seems to contain the whole great heaven. As we pause on horseback in a river-ford, the river seems to be standing still, and ourselves to be carried violently up the stream. A portico is supported on equal pillars, and yet as we look through it their height seems to be dwindling, and the floor seems to be rising, till they

meet in a vanishing-point. Oars we know to be straight ; and yet dip them in the water, and their submerged part will seem to be bent and broken :—

“ So, too, we seem when chained in sleep profound
 To move in daylight, footing field and hill,
 Sailing new seas, and treading alien ground ;
 And when the earnest night is deep and still,
 Our ears are loud with many a fancied sound.”

And many other marvellous things are there, which would seek to shake the credit of the senses : but in vain ; for it is not the senses that deceive us, but we who deceive ourselves, by wrongly interpreting what they rightly tell us. Again—

“ If a man hold that nothing can be known,
 He knows not whether he can know this even,
 Since he admits the things he knows are none.
 He stands with head on earth, and feet in heaven,
 And I decline to talk with such an one.”

No—such scepticism as this is utterly suicidal. The senses are all we can take our stand on, and they are unerring guides.

And now, says Lucretius, I will explain the action of the other senses. Sounds, in the first place, are streams of atoms, whose shape varies with the quality of the sound :—

“ Nor are the first beginnings of like form
 Which pierce the ears in crabbed sounds and sweet,
 As when in air the braying trumpets storm
 Which rouse barbarian nations to their feet,
 And when its carol comes from the wild swan
 Over the headlong floods of Helicon.”

When we speak, we force our voices out of the depth of our bodies, and the tongue gives their shape to them just as they are leaving our lips. Words travel a certain distance keeping their clear shape ; gradually this becomes obliterated. No sooner is a voice uttered, than it starts asunder into many voices ; and this is the way in which a whole assembly hears the words of a single speaker. Voices which do not strike directly on the ear are carried away and lost, or else striking on something solid are thrown back again :—

“ Which knowing, you may to yourself explain,
And to your friends the explanation tell,
How it is that the rocks give back again
Our syllables in many a lonely dell ;
And how, when in the dusk we call in vain
For our strayed friends, the hills grow voluble,
And their familiar names are tossed about
From slope to slope in many a lipless shout.

I have seen places where to one such call,
Straight six or seven voices would reply,
In such a wise did every rocky wall
One to the other make our utterance fly ;
And then the others, likewise, one and all
Would toss them back in answer presently.
In spots like these, the village people tell
That the shy nymphs and goat-foot satyrs dwell.

And there, too, say they, lurk the haunting fauns,
Who make strange noises through the night profound,
Playing quaint pranks amongst the shadowy lawns,
With twangling lyres, and pipes of plaintive sound.

Also, they hear god Pan, when spring-time dawns,
Come, that wild head of his with pine-boughs bound,
To touch the reeds with crooked mouth, and fling
Their song of sylvan music to the spring.

Now, to proceed, you need not wonder how
It is that voices come and beat the ears
Through things through which the eyesight cannot go.
Because of this the reason plain appears—
Full many a thing that lets the voice go through,
The visual film to thousand pieces tears,
'Tis of so fine a texture."

Lucretius now proceeds to give that account of the remaining senses, of dreams, of the imagination, and of the way in which external things act as a stimulus to the mind, and the mind again acts as a stimulus to the body, which has been already explained at length. He then goes on to describe the nature of love, which he treats of simply as a form of physical excitement. This pleasure, he says, is for us Venus; from that desire is the Latin name of love—from that desire has first trickled into the heart yon drop of Venus's honeyed joy, destined to be followed soon by chilly care. For though that which you yearn for is away, yet images of it are at hand, and its sweet name is present to the ears. But it is meet to fly such images, and scare away all that feeds love, and not keep your thoughts set upon one object, and so lay up for yourself care and unfailing pain. For the sore gathers strength, and becomes inveterate by feeding. For love, says Lucretius, is a fierce madness, a hungry longing, that will never be satiated, and will always

leave you craving. For its sake young men waste their strength and ruin themselves, and their whole life is passed at the beck of another:—

“ Meanwhile their substance wastes and runs away
Turned into coverlets from Babylon ;
Their duties are neglected day by day,
And all their noble name is quite undone.
Meanwhile upon her brow green emeralds play,
Glancing in gold, and shoes from Sicyon
Deck her elastic feet ; and tears and traces
Are on her crumpled robe of love’s embraces.

And all the wealth their good sires toiled to gain
Changes to head-gear, and rich anadem,
And Cean robes with trailing sweep of train,
And feasts, and goblets thick with many a gem,
And unguents, games, and garlands. All in vain !
They have their canker in the heart of them.
A bitter something, in the midmost hours
Of joy, starts up, and stings amongst the flowers.

Either because they burn to see how they
In foul embraces and effeminate
Slay their own selves, and waste their strength away;
Or else the dainty lips, on whom their fate
Hangs, some slight word of doubtful meaning say,
Which stings their heart like fire; or soon or late
They think her eyes are roaming, to beguile
Others, and catch the footprints of a smile.”

And these evils are the evils of love when it is successful. How much greater are those of love that is crossed and hopeless ! So that it is best to watch beforehand, that you be never entangled in the snare.

And yet even when you are entangled you may escape, unless you stand in your own way, and refuse resolutely to observe all those vices of mind and body which you may be quite sure will abound in her, whom you will. For this is what men do for the most part, blinded by passion, and attribute to their loved ones beauties that are not really theirs.

“Muddy complexions have a dusky spell,
A lover says. A slut’s a natural creature,
A romping hoyden seems a slim gazelle ;
A sharp-tongued spitfire dazzles like a meteor.
See, in yon slow and cumbrous movements dwell
A queenly pride ; that face, without a feature,
Is strangely touching ; and this fat plump chit
Is, top to toe, the very soul of wit.”

Lucretius goes on, something in the temper of Pope, to describe how different is

“Cynthia at her toilet’s greasy task,
To Cynthia fragrant at an evening masque.”

And draws a humorous contrast between the scene at the toilet indoors, when the lady is putting the last delicate stroke to her charms, with her maid behind her tittering at the whole process, and the lover outside at the threshold full of yearning for the adored one, and thinking sacred for her sake the very house that holds her.

And yet, says Lucretius in conclusion, it is not all love that is thus vain and deluding : some women have a genuine passion for their lovers or their husbands ; and often a wife, though of but small beauty,

will by her gentle manners win the heart of a man, and custom will habituate him to pass his life with her, and love will set its mark on his heart at last, as dripping water will at last make a hole in a stone.

BOOK V.

Here again the book opens with the praises of Epicurus :—

“ Where is the bard whose verse avails to tell
 Of themes like these—of Nature’s ways sublime ?
Or who shall so the power of verse compel
 As fitly to resound his praise in rhyme,
Who all those spoils, that to his own hand fell,
 Hath left us as an heirloom for all time,
Making us wise for ever ? Truly none,
 Unless indeed it be a god alone.

For Memmius, if ‘tis pleasing in thine eyes
 To speak the plain unvarnished truth of things,
The author of these great discoveries—
 He was a god of gods, a king of kings.
For first through him men grew what men call wise,
 And from him every rule of prudence springs,
Who towed our life out of the storms and night,
 And moored us in the tranquil calm and light.”

What, compared to his discoveries, are those of other discoverers ? Ceres, it is said, gave corn to us, and Bacchus wine. But we could have lived on happily

without either of these, and many a nation does so even now. But unless the breast is clear, no life can be happy ; and hence he, Epicurus our mighty master, is rightly held a god by us, since from him come those sweet mental solaces which are even now spreading in the world, and soothing the hearts of men.

“ Yea, and our master therefore did far more
Than vaunted Hercules. For how should we
Fear the Nemean lion’s rage and roar,
Or that great bull in Crete beyond the sea,
Or all the bristles of the Arcadian boar,
Or what to us could snaky hydras be ?
Or how would Gorgon fight us from his gloom,
Or those Stymphalian birds with brazen plume ?

Or that great dragon which for ever keeps
The shining fruitage of the Hesperides,
With fierce and vigilant eye that never sleeps,
Couched ’neath the shadow of the charmed trees,
Whilst round the midmost stem his huge coil creeps—
How should he harm us by his far-off seas,
The Atlantic shore, and the abhorred waves
Which even the wild barbarian never braves ? ”

And all the other monsters of like kind that have been conquered, what harm, I ask, could they do us were they even now living ? None, methinks — neither these, nor the like of these. But unless the breast is cleared, it itself is full of monsters ; rather let us be afraid of them, and honour and glorify him who put them first to rout.

Wherefore, walking in his footsteps, I will tell you in order how the world arose, and what laws it obeyed

in rising. I will show you that it had a birth, and that death is also in store for it. I will tell you how the heaven is formed, and the earth also, the moon and stars, and how living creatures emerged out of lifeless matter ; and I will show you how all things are held and fettered by immutable laws and boundaries :—

“ Well, not to dally more with things unproven,
Look round you, on the heaven, the earth, the sea,
The triple thread of which the world is woven,
Three bodies, Memmius, such a different three.
A day shall come when these shall all be cloven,
And all the things that are shall cease to be,
And blown like dust upon a stormy wind,
The whole world melt, nor leave a wrack behind.”

If you doubt how this can be, consider the power of earthquakes, and how in a few moments all things near are shattered by them :—

“ But these may fortune banish from our path,
Nor with such signs see fit to assure our faith.”

But before I go on to sing you the sure oracle, the doom and the destruction that await this whole universe, I will again pause a moment and sustain your trembling mind, lest religion should still make you think that the world will endure for ever, and that all who should seek to prove otherwise shall suffer punishment, like a fresh race of Titans labouring to undermine the world. For what life or sense is there in the sea, the sun, the moon, that they should heed or hear what men say about them ? How can they possibly have any life or passions in them ? For we have seen

what life is. It cannot exist without a fleshly body ; and even in that body it can live only in a certain part.

Then, too, you cannot possibly believe that the gods exist in any parts of the world. Their fine nature is far withdrawn from our senses ; the mind itself hardly sees them. We cannot touch them ; and how then, I ask you, shall they touch us ? What folly, too, to say that the gods have made the world, and set it in order, and arranged it for the use of man ? In the first place, what could possibly induce them to take such trouble ?—

“ What could they gain from such a race as ours ?
 Or what advantage could our gratitude
 Yield these immortal and most blessed powers,
 That they in aught should labour for our good ? ”

Or what new incident could have broken in upon them, and made them desirous to change their former life ? Or even if they wanted to make a world, where did they find any pattern to work by, and how did they set about the business ? or how, again, did they ascertain the world-making capabilities of the atoms, unless Nature herself, mother of the gods, had shown the gods all that she herself could do ?

“ But even had the science ne’er been mine
 Of first beginnings, and how all began,
 I could show clearly that no power divine
 Helped at the work, and made the world for man ;
 So great the blunders in the vast design,
 So palpably is all without a plan.
 For if ’twere made for us, its structure halts
 In every member, full of flaws and faults.

Look at the earth ; mark then, in the first place,
Of all the ground the rounded sky bends over,
Forests and mountains fill a mighty space,
And even more do wasteful waters cover,
And sundering seas ; then the sun's deadly rays
Scorch part, and over part the hard forests hover ;
And Nature all the rest with weeds would spoil,
Unless man thwarted her with wearying toil.

Mark, too, the babe, how frail and helpless, quite
Naked it comes out of its mother's womb,
A waif cast hither on the shores of light,
Like some poor sailor, by the fierce sea's foam
Washed upon land ; it lies in piteous plight,
Nor speaks, but soon, as it beholds its home,
Bleats forth a bitter cry—oh meet presage
Of its life here, its woful heritage !

But the small younglings of the herds and flocks
Are strong, and batten on the grass and dew.
They need no playthings, none their cradle rocks,
Nor ask they with the seasons garments new.
They have no need of walls, and bars, and locks
To guard their treasures ; but for ever true
To them, the earth her constant bounty pours
Forth at their feet, and never stinted her stores."

Lucretius now goes on to point out in detail the continual waste of everything that is visibly going on in the world around us, and to argue from this that of the whole there must be one day a like dissolution. Earth is for ever being dissolved in water, or broken into dust and being whirled away in air ; water in its turn is being for ever drunk up by the sun ; and the sun itself is for ever wasting its substance in swift emission of rays.

"So you may see at night such earthly fire,
As hanging lamps, and torches blazing bright,
Darling their flames out, as with keen desire,—
Desire, I say, to feed the wasting light,
Which travelling, still doth on its path expire,
And would if not renewed be broken quite;
But to the dying rays succeed fresh rays,
And on the wall the light unpausing plays."

Again, too, you may see that even stones are conquered by time, high towers moulder and fall down crashing, and even the mountain-summits crumble to decay.

Think of this, too,—if the world was ever born, so surely will it perish. And it must have had a birthday—it cannot have been from everlasting, or else some record would have come to us of times before the Theban war and the fall of Pergamus.

Again, as I have shown that nothing is solid but the atoms, and that void is mixed up with all things, and that void and atoms alone can resist all force and are indestructible, you may be certain, you surely can no longer doubt, that the grave and gate of death is gaping for the whole universe.

Again, I have just shown you how all the elements of the world are engaged continually in a fierce intestine war; and to this struggle there must some day be an end,—either water, fire, or air will one day get the mastery, and then there will be the beginning of the end. Twice, indeed, even already, they feign that the battle has been wellnigh ended, and that water once was all but master; and once again that

fire was, when Phaethon was whirled aloft in the sun's chariot—

“And the boy's hands let go the dangling reins,
And the team tore across the ethereal plains.

But the almighty father, seized with ire,
Launched at the boy the all-dreaded thunderstone;
And as he fell, the Sun, the Sun his sire,
With rapid hand, from headlong Phaethon
Snatched the world's lamp of ever-burning fire,
And gathered up the reins, and one by one
He tamed the trembling steeds, and once again
Mounted his car, and gave new life to men.”

And now, says Lucretius, I will tell you in what order the present world evolved itself. And he goes on to describe the first chaotic atom-storm, and the gradual massing together of the earth, and how it cast off from itself the blue heaven, as a kind of husk or covering, and then threw out the fires that make the moon, and stars, and all the other lights that are in the firmament. First an igneous ether, he says, went up from the earth's surface, which, sweeping round as fire, gradually formed the heavens.

“And this same ether rising, in its wake
Full many a seed of vivid fire up-drew.
Thus when we see the low red morning break
Along the grasses rough and gemmed with dew,
Does a grey mist go up from off the lake,
And from the clear perennial river too;
And even at times the very meadows seem
From their green breast to breathe a silvery stream.”

He now adds a number of details as to the formation of the earth's surface, which have been described

already ; and again refers to the onward changeless sweep of the ether, which keeps on its even way, unheeding all the turmoil and the storms in the lower air, between the earth and it.

“ Onward it ever drives in changeless sweep ;
And how it still can so hold on and on
The Pontic sea may teach you, which doth keep
Ever due on, nor turns, for any force,
Its icy current and compulsive course.”

Upon this follows a long series of speculations on the motions of the sun and moon, the rest of the heavenly bodies, and the laws which govern the regular recurrence of the seasons, and the changing duration of the hours of light and darkness.

And now, he says, since I have explained in what way everything *might go on* throughout the blue vault of heaven, I will go back to the infancy of the world, and the tender age of the fields, and show what, in their first attempts at child-bearing, they tried to raise

“ Up to the shores of light, and gave them there
Into the keeping of the wandering air.

In the beginning, then, the clods gave forth
All kinds of herbage, and a verdant sheen
Was glossy on the hills ; and flowery earth
Laughed over all her meadows glad and green :
Then bushes next, and trees of greater girth,
Orderly rising into air were seen ;
Which things came forth spontaneous everywhere,
Like a bird’s feathers or a horse’s hair.”

Then gradually, in the manner that has been described already, the earth gave birth to men, and animals, of the kinds that are now with us :—

“ But hardier far than we were those first races
 Of men, since earth herself did them produce,
And braced them with a firmer frame than braces
 Us now, and strung their arms with mightier thews.
Nor sun nor rain on them left any traces,
 Nor sickness. And they never learned the use
Of arts, for ages: but like beasts they ran
 Wild in the woods—the early race of man.

Their strong arms knew not how to guide the plough,
 Or how to plunge the spade and till the plain,
Or from the trees to lop the failing bough.
 But what the sun had given them, and the rain,
They took, and deemed it luxury enow.
 Nor knew they yet the fatal greed of gain.
But in the woods they sought their simple store,
 And stripped the trees, and never asked for more.

For thick the acorns in the forest grew,
 And arbute-trees would yield the berried prize,
Which in the winter wears a scarlet hue;
 And the earth bore these then of larger size;
And many another suchlike berry too,
 It, from its yet unminished granaries,
Gave gladly forth, more than sufficing then
 To appease the dawning wants of those poor men.

And like wild herds they clustered to the sound
 Of falling waters, loud in many a dell,
To slake their thirst; and as they roamed, they found
 The nymphs' green haunts, and there began to dwell;

For there sweet waters gushed from out the ground
 In living streams, and on the damp rocks fell—
 The damp rocks, green with many a mossy stain—
 Then slipt away, and babbled to the plain.

And they knew nought of fire, nor thought to fling
 The skins of beasts about their nakedness ;
 But the wild wood's roof was their covering,
 Or rugged mountain cave ; and they would press
 Into the brushwood, from the buffeting
 Of rain and storm, and all the weather's stress.
 And nothing yet of rule or law they knew,
 Nor how to keep the weal of all in view.

Whatever fortune threw in each man's way,
 That each bore off and hoarded as his own,
 To grasp and clutch it as his proper prey,
 Aloof, and living for himself alone.
 And naked in the woods the lovers lay,
 And by her lust or his each girl was won ;
 Or else by force ; or bribed, she heard his suit,
 By little gifts of acorns or ripe fruit.

And trusting in their strength of hands and feet,
 They would outstrip the wild beasts in the wood ;
 And some to death with ponderous clubs would beat,
 And hide from fiercer ones, who sought their blood :
 And just where night, with noiseless step and fleet,
 O'ertook them, like the dull sow's bristly brood,
 Down on the ground without a thought they lay,
 And burrowing in the leaves slept sound till day.

· And never waking in the dark, with fright
 Would they cry out, amazed for all the shade,
 And beg the sun to bring them back the light.
 But stolid they would sleep, and undismayed,

Till rosy morning pleased to climb the height
Of heaven ; for they, who from their birth surveyed
The light and dark alternate rise and fall,
Trusted the world, nor feared the end of all."

But this state of things did not last for ever. Progress began, and Lucretius here at length describes its advancing stages—the gradual discoveries of fire, of the use of the metals, of houses, of law, of monogamy, and all the other elements and influences of civilisation. And he then goes on to account for the rise of religion, attributing it, as has been already said, to two different causes—the sight of the wandering images of the gods' forms, and also to ignorance of the hidden forces of nature. Then when once this conception of the gods was formed—

" They gave them dwellings in the heavenly light,
Far off and calm ; because for aye appear
Through the high heaven to roll the moon and night,
Moon, day, and night, and all night's stars austere,
And trailing meteors, vagrant things of light,
And flying fires that wander far and near ;
And because snows and hail and wind are there,
And the hoarse threats that thunder through the air."

O hapless race of men, exclaims Lucretius, when first they taxed the gods with having anything to do with this world of ours and its management ! Little knew they the terror of the chains they were binding about themselves ; what wounds, what tears they were preparing for their children's children : For still as we gaze at the vast world around us, the

importunate fear will at times steal into our soul, that the power of the gods may be unlimited ; and religion begins to raise its reawakening head.

Having made this digression, Lucretius again returns to his account of human progress, describing the rude, simple pleasures of our earliest ancestors, and warning us that luxuries, though inevitably found out one after one, and inevitably making us discontented with what went before, have made us no better pleased with the present, though they have made us displeased with the past, and that with splendour and refinement have come envy and discontent, from which the simple savage early world was free. Mankind, he says, therefore, ever toils vainly and to no purpose, and wastes life in groundless cares, because men have never learnt what is the true end of getting, and up to what point true pleasure waxes. This by slow degrees has carried life out into the deep sea, and stirred up from their lowest depth the mighty billows of war.

And now all has been told,—how time by degrees brings each several thing before men's eyes, and reason raises it up into the borders of the light ; for things in their due order must be thus advanced and brought forward, until they have arrived at the summit beyond which they can go no further.

BOOK VI.

We now come to the last book of the poem ; and this, again, opens with another celebration of Epicurus :—

“ Athens it was, Athens, most famous name,
 Who first gave corn to us, sick sons of earth ;
 And taught us countless arts, and how to frame
 Laws ; but she gave her gift of chiefest worth,
 When into life she sent that man of fame
 Out of whose mouth the words of truth welled forth.
 Wherefore his glory through the world is spread,
 And still he speaks though dumb, and lives being dead.

For when he saw that each most sore distress
 And craving of the flesh was satisfied,
 And men forbore from wrong and lawlessness,
 And life became secure, and pomp and pride
 And pleasures multiplied, yet none the less
 Each heart in secret ached, and each breast sighed,
 And that for ever in the mind’s despite
 Were tears and pain our guests from morn to night ;

He plainly saw that not the honeyed draught
 Of life itself did all this teen afford ;
 But 'twas the vessel out of which 'twas quaffed
 That spoiled whatever into it was poured ;
 Partly that through the potter’s careless craft
 It leaked ; in part, that in its depths were stored
 Some bitter dregs, that sent a taint through all
 The sweets it held, of wormwood and of gall.”

He therefore cleansed men’s hearts with his truth-telling precepts, and placed a limit to lust and fear,

and showed the chief good we should all strive to reach, and the narrow track that led to it. And he showed that the ills that plague men in this mortal life were ills that came from nature—from a blind chance or force, call it what we will. For the terror that heretofore had held men in bondage, and indeed still holds very many of them, is to be dispelled by reason, and by reason only :—

“And now, since I have shown the ethereal plains
Of heaven are mortal, and the earth below,
And of all things that heaven or earth contains
The life and movement I have striven to show,
The goal draws near. But something yet remains
To tell. I have another mile to go :
And in the Muse’s car must mount on high,
'Mid storms and winds, and tell you how they fly.

For foolish mortals, one and all together,
Say that the calm high gods, by each caprice
Of fretful temper swayed, ordain the weather,
Venting their rage in storms ; and when they cease
From rage, relenting with a cloudless ether.”

But in order that reason may drive from us the very remembrance of such old-wives’ tales as these, and the unmanning and senseless fear that they would still, if they could, beget in us, I will sing to you of the law and aspect of heaven, and of the birth of the storms and thunders, and of the bright lightnings, that you may see how all goes on by a fixed unbending law, that has no thought of man, nor any care about him ; and that you may spare your pains, and never look to

the skies for omens, nor heed a jot from what quarter
the volant fire has fallen.

Thunder, in the first place, is the produce of clashing clouds, which either flap in the wind like canvas stretched and tossing over theatres, or, filled full of wind inside, burst suddenly as a distended bladder does.

It lightens, too, when the clouds have struck out by their collisions many seeds of fire; but we hear the thunder after we have seen the lightning, because, though the two are really simultaneous, the sound travels more slowly than the light does. There are also other ways in which the clouds

“Dye all the landscape with their wingèd light,
And with a rapid quivering flashes out
The sailing storm.”

For sometimes the fire is caused, not by the clouds themselves, but by the wind working its way into them, and growing hot by its own velocity. This takes place, you must know, when the clouds are very dense, and are piled up into the heaven to an unimaginable height:—

“For do but note what time the storm-wind wild
Comes carrying clouds like mountains through the air,
Or on the mountain’s selves the clouds are piled
Motionless, and each wind is in its lair,
Then may you mark those mountain-masses proud,
And huge caves built of hanging rocks of cloud.”

Well, it is through these cloud-mountains that the storm raves and prowls, and pent amongst the caves

and precipices, howls like a pack of wild beasts, and, seeking a way out, rolls together seeds of fire, and at last comes bursting out in forked flashes.

And now I will tell you another thing;—I will tell you by what law

“The mighty thunderbolt
Goes through the walls of houses like a shout;”

piercing things that no earthly fire can pierce—nay, not even the fire of the sun in heaven. Lucretius fulfills his promise at great length, and devotes nearly two hundred lines, of no great interest, to his account of these thunderbolts; asking in the middle, not without pertinence, why, if they were hurled, as was said commonly, by the gods, to execute their vengeance, so many of them fell in the seas and deserts, and why the rest so rarely hit the only people for whom they possibly could have been intended.

From these subjects he passes on to the laws of earthquakes, the way in which the sea is still supplied with water, although so much is being constantly evaporated off its surface, the action of volcanoes, the rise and fall of the Nile, and a variety of other minor phenomena. He then at great length gives his explanation of the action of the magnet; and then suddenly leaps from this to a very short passage on the laws of the propagation of disease, which he traces to various conditions of climate, and the perpetual flying about in the air of particles that are hurtful to life, when attacking it under certain conditions. And it makes, he says, no difference whether we travel to places unfavourable to us, and change the atmosphere which

wraps us round, or whether nature without our choice brings to us an atmosphere unsuited to us, or something to the use of which we have not been accustomed, and which is able to attack us on its first arrival.

He then, without more preface, at once plunges into a description of the great plague at Athens, borrowed from the celebrated account given by Thucydides. Such a form of disease, he says, and a death-fraught miasma, once within the borders of Cecrops defiled the whole land with dead, and unpeopled the streets, and drained the city of its citizens. Rising first and starting from the innermost borders of Egypt, having travelled through long reaches of air and over floating fields of sea, the plague pitched at last on the whole people of Athens :—

“ The pestilence would first the head assail,
And then the bloodshot eyes, wherein there stood
A dull set fire ; and next the throat grew pale
Inside, and all its passage blotched with blood.
Then ulcers formed, anon the voice would fail ;
The tongue, the spirit’s spokesman, would exude
Blood also, and relaxed in every string,
Lolloed in the mouth a parched and listless thing.

Next down the throat the insidious pest would glide,
And through the breast assault the heart’s own door ;
Then slowly would the vital power subside,
And through the mouth a stench begin to pour
With the decaying breath.”

And so the description goes on for about a hundred and twenty lines, adding detail of this kind to detail, touching by the way on the agony and despair of the

sufferers—how no remedy could be found anywhere—and at the appalling spectacle—

“ How medicine muttered low with voiceless fear.”

And this above all, says Lucretius, heaped death on death ;—whenever any refused to attend their own sick, killing neglect soon after would punish them for their too great love of life, by visiting them in their turn with as foul an end, abandoned in their turn, and forlorn of help.

“ They too who stayed to tend the beds of death,
Themselves anon were seen to droop and die,
Drawing contagion from the tainted breath
That thanked them for their kindness piteously.”

And at length so great was the mortality, so many were the bodies in vain crying for burial, that the old rites of sepulture continued no more in the city, with which pious folk of old had been always wont to be buried : for everything was confusion and dismay, and each man would sorrowfully bury his own, in any way the present moment allowed.

“ And many a direful deed did men do then,
Urged on by sudden want and poverty ;
For on the funeral pyres of other men
They thrust their own poor kin uproariously ;
And wranglings rose, and oft their blood they'd shed,
Dogged, and dying ere they'd leave their dead.”

And with these lines the poem of Lucretius ends.

CHAPTER V.

LUCRETIUS AS A POET.

SOMETHING has now been seen of what Lucretius did, under both its aspects. We have examined each of the two things he gave to the world, and for which the world remembers him—his system of natural science, and the poem in which he set that system forth. It now remains to us to glance back over both of these, and to take some general view of them, that we may form some estimate of the place their author held both as a poet and a man of science ; and also—which is a matter of deeper interest—how he stands, when compared with us, in relation to the deeper and the more perplexed questions of life.

We will consider him, first in the character under which he is most generally known and spoken of,—the character simply of a poet.

And here the first and most obvious remark to make is, that though Lucretius was by his genius most undoubtedly a great poet, yet, judging of his work as a whole, he has very certainly not written a great poem. We must say in this case, as Ottilia's tutor says in Goethe's novel, “ We presume capabilities ; we require

accomplishments." And the "Essay on the Nature of Things" is not an accomplished poem. The very subject itself, and still more the sort of treatment that, for his own purposes, Lucretius thought essential to it, shut out all possibility of its ever being this. By far the larger number of his verses are devoted to explaining facts which not only afford naturally no material for poetry, but which can only be approached fitly in the absence of all poetical excitation. Instead, therefore, of putting poetry into the phenomena he has to deal with, Lucretius has, in the bulk of his work, to root out all that man has already put there. Man, and man's passions, and the human sense of beauty—without these there can be no poetry. Nature is poetical only as connected with these. And when Lucretius deals with nature, it is his great aim to lull passion, fancy, and all emotion to rest, and coldly and calmly to see things as they really are. Much poetry, as we all know, has been written about the moon, and we know well enough the sort of moods of which most of this poetry is the outcome. But when Lucretius writes of the moon, no such moods are his. The moon to him is simply a phenomenon, to be observed coldly, and with no passion, till the secret of its movements is explained, and every trace of mystery stolen from it. So, too, with all the rest of nature—the sun, the stars, the lightning, the thunder, the storm, the clouds, light, vision, and finally human life, and human passion itself—all is to be treated coldly and dispassionately; interrogated and cross-questioned in the pure spirit of prose, though committed afterwards into

a form of verse. But it is a form only—a form that cannot deceive us. The voice is still Jacob's voice, though the hands are the hands of Esau. But it is enough to say that Lucretius, in the bulk of his work, writes as a man of science ; and in that is said conclusively that he cannot be writing as a poet. The poet and the man of science may both be dealing with the same object ; but the poet, when he deals with nature, tries to raise the commonplace into the region of the mysterious ; the man of science tries to bring down the mysterious to the level of the commonplace. And even when the two come to the same conclusion about the same thing, they would no more speak the same words or think the same thoughts about it, than would a lover and a physician who were watching the same girl dying.

Considering, therefore, that a good four-fifths of the work of Lucretius is intentionally, and in its very essence, nothing but pure prose—only prose versified—it is hardly to be expected that it will, as a whole, give us the pleasure of a poem, or indeed leave us with the impression that we have been reading one. Poetry, however, runs everywhere through it, like metallic veins in an ore ; and this poetry is of a very high and a very varied quality, though the scattered state in which it has thus been given to us has done much to hinder its popularity, and apparently made its author merely a poet's poet amongst the ancients, as it has left him a scholar's poet amongst the moderns.

For many reasons this is much to be regretted, so great and powerful, as a poet's, his genius was ; and

not this only, but so versatile. Few poets of antiquity show such a range of power and feeling, such a combination of humour with gravity, and of tenderness with indignation. Of all these qualities specimens have been given; and though little justice can be done to them in translation, something of their nature will be sufficiently obvious to the reader. There are one or two others that it may be less superfluous to dwell upon. First of these is the rude fierce vigour of his imagination, which will not be content with a hazy presentation of anything, but will have it dragged close before us solid, bare, and naked,—as when, in discussing whether the universe be infinite, he bids us picture its bound, if any bound there be to it, and asks what will happen then if we were to hurl a javelin into the space beyond. In this quality of keen external observation, this attention to the material aspect of things, this habit of conceiving everything in some imaginable or picturable form, he seems to have surpassed all the ancient poets, and not unfrequently puts us in mind of Dante. And he has in virtue of this a quality which makes him, in one particular way, seem to us not so much an ancient as a modern,—that is, his manner of describing scenery, and all the changing aspects of the outer world. Of all ancient poets, indeed, he is perhaps the most picturesque. The early aspect of morning, the low sunlight striking along the dewy grasses, the grey mist going up from the lakes and rivers—these, and things like these, he describes almost as Wordsworth might have described them. There are other pictures, too, equally vivid—such as that of the

square towers of a town, which, as we approach them, look rounded in the haze of distance ; or that of the coloured awnings flapping above the crowded theatre, with the bright-coloured sunlight pouring down through them. Then, again, there are descriptions of storms and storm-clouds, their shapes, their movements, their slow weird changes, which are not unlike the verse of Shelley or the pictures of Turner, and to which no counterpart can be found in ancient literature. There are, too, a number of lesser touches—such as his mention of the way in which, as we walk at morning, our faces are brushed by the dewy threads of the gossamers, or by floating balls of thistle-down. Whilst to heighten the effect of these, and to fill it in, we have perpetual allusion to the way in which our other senses, besides that of sight, are touched by the outer things of nature ; how our nostrils, for instance, are met with a pungent smell as soon as a night-light is extinguished suddenly ; or how the air by the sea-shore breathes on our faces salt, with the moist brine. In fact, Lucretius, more than any other of the great ancient poets, seems to bring back to us the *atmosphere* of the past. We seem, as we read him, to be actually breathing the air that he breathed, to be smelling the same smells, and hearing the same noises, and to see the skies, and seas, and hills, through the same liquid distance.

We must be careful, however, not to read our own sentiments into Lucretius ; nor to think that, though he gives us all the pictures of storm, and cloud, and sunshine, of sea and valley, as accurately, and with as

much care, as a modern poet might, that he was like a modern poet in his feeling about them. The case is quite otherwise. In his descriptions of nature, Lucretius is a utilitarian, not a sentimentalist. His descriptions are not pictures to be looked at for themselves ; they are diagrams to illustrate the text of his scientific discourses. Some pleasure, no doubt, even as pictures, they did give to him ; but this pleasure was secondary, and in many cases he would seem to be hardly conscious of it. Only dimly, and in the shape of the animal quickening of the spirits brought about in the spring-time, or in the sensuous pleasure of lying on green grass and feeling the cool shelter of trees, does he seem to have realised what joy a man may have in the world's outer beauty. And in this he was like all the other ancient, as contrasted with the modern poets. But the ancient poets as a rule not only felt less for nature than we do, but they also said less about it, and therefore the contrast between them and us is less striking.

But though Lucretius did not, as Wordsworth or Shelley did, nor even as Ausonius, Claudian, and the later Latin poets, feel the beauty of nature as a spectacle, moving them by its varied outlines and its ever-changing shades and colours, he did feel to the full the sublimity of it, as a vast immeasurable force, revealing itself indiscriminately now in this way, now in that—in the earthquake, in the thunderstorm, or the power of turbulent waters. This feeling, however, we must remember is very different from that which prompted such lines as these :—

“There are two voices—one is of the sea,
And one is of the mountains—both divine;
They were thy chosen music, Liberty.”

Nature is the hero of the poem of Lucretius; but it is not a hero that has any sympathy with man, or can be anything to man, excepting in so far as man can use it. For the rest it is celebrated as a thing of boundless power, and, as such, a thing sublime and awful, but a thing as well of boundless impotence, that is exalted by the poet, only to be again dragged down by him, and which he would teach man to look at with fearless and equal eyes. Lucretius has no desire to worship Nature, sublime as, in its power, he feels it to be. He feels rather a sense of still greater sublimity in achieving the splendid victory over his own impulse to worship it, and the same impulse in other men, by which he knows that they too are tormented.

This is the one notion that runs through his whole poem; he is man’s champion, as against all other forces. He tilts like a knight-errant against every form of terror, one by one unhorsing them, and leaving them disarmed and prostrate; charging first at the most importunate and the most formidable, and then, having cleared the ground about him, demolishing at his leisure the lighter and more scattered squadrons.

And thus though his poem, as we have said, is composed so largely of what is properly speaking pure prose, if we look at it by the light of the writer’s intention, instead of what he has actually accomplished, we shall come to see in it the outlines of a true poetic whole. We shall see that there is in it something

epic ; we shall see in it one single purpose being worked out to its end without pause—and this purpose an heroic one—the destruction by a mortal man of all the terrible immortals, and the robbing the whole frame of things of their immemorial menace. We shall see that in the arrangement of the argument there is poetic art also, as it gradually rises in the middle to the demolition of that stronghold of religion, the immortality of the soul, and then slowly brings us to confront lighter difficulties, as though a storm were slowly drifting away from us, and letting a gradual sunlight in on us through the clearing skies.

Of course, in view of this, it may be contended by some that the "Essay on the Nature of Things" must take rank, as a whole, as a great complete poem. To a certain extent disputes of this kind are disputes of words merely, and there is little good in pursuing them. Perhaps we shall gain the best notion of the true poetic character of the poem of Lucretius as a whole by comparing it to the history of Herodotus, which has, as a whole, a fully equal title to be considered poetry. There is in Herodotus the same epic treatment, the same *quasi* artistic massing of materials, the same constant presence of potential poetry, the same constant presence of actual prose. But in the fate of the two writers there has been this difference, that whereas the poetry of Herodotus has been as wings to his prose, the prose of Lucretius has been a dead weight on his poetry ; and in addition to this, there is yet another misfortune to be mentioned—that the poetry of Lucretius has been also a dead weight on his science.

CHAPTER VI

LUCRETIUS AND MODERN THOUGHT.

A DEEPER consideration now remains for us. We have seen what Lucretius was as a man of science. We have seen also what he was as a poet. In his first capacity, if he is judged on his own merits, his work will seem to us but an antique curiosity—a piece of scientific bric-a-brac. Judged of as a poet, we may each give him what place we will. But the special tastes, neither of the antiquary nor of the literary critic, are tastes of the first importance, or of any universal interest. Books were made for men, not men for books. Art and poetry are valuable only if they can be absorbed into life : life is not valuable because it can be absorbed into art and poetry. And though Lucretius, as a distinct subject of study, may afford keen pleasure to some of us, and seem a matter of really very grave moment, we should recollect, to the world in general, how trivial such mere student's interests are. Looking on Lucretius, however, in another light, not as scholars, or as critics, or as literary epicures, it is possible to connect him with other interests that are of really vital moment—interests to the house of which science, and

art, and literature, are properly only doorkeepers. And yet, even looked upon in this way, he will suggest thought, rather than dictate it. To many of us, however, he can hardly fail of being very suggestive.

To begin then. We have already seen in some detail what his science was. Let us now briefly compare that science, and the methods it was founded on, with the science of our own day. If we consider the various details of his theory of things, and judge of these by the exact form which he gave to them, it is, of course, plain at a glance how remote they are from what we now hold to be true. It will be seen, to a certain extent, that this could not be otherwise, if we merely consider what his conception was of the size and shape of the universe—a conception which he seems to have adopted with but small reflection, and the truth of which he took but small pains to verify.

But his science differs from ours in a deeper way than in any such superficial grotesqueness of detail. The entire foundation of his system is essentially defective and insecure. His first principles are crude, loose, and puerile. Such, for instance, is his conception of gravity, and this conception is the corner-stone of his whole edifice. Weight, as he explains it (weight with him being the one motor power in the universe), and the tendency of every substance to be for ever falling *downwards*, is, strictly speaking, unthinkable. How, in infinity, can there be either an *up* or *down*? Starting with a premiss like this, it is clearly impossible that he can know anything scientifically of the laws of motion. It is evident then, even if we go on

farther, from the very nature of the case, what a want there will be in any explanation he can possibly have to offer us.

And there are many more wants of a like kind—an absence of many conceptions which we now see to be essential to a true understanding of almost anything. Chief amongst these is his incapacity to conceive of the propagation of energy without the propagation of matter. Of how things can interact on each other from a distance by means of waves, of tremors, of vibrations, he knows nothing, he dreams nothing. All material interaction is conceived of by him in the crude form of material projection. A word, for instance, is a body with a definite shape, which strikes our ears as a stone might. Our sight of a door is produced by the whole of that door's surface striking our eyes, as a stone might. And all kindred phenomena are explained in a like way.

With so narrow and incomplete a conception of the powers that matter might possess, and of the aspects under which it was necessary to study and observe it, it is evident that under no circumstances could he have arrived at any real truth about things. And even on his own showing, his own first principles are quite inadequate, and he is perpetually making to them certain vague and unacknowledged additions. To take, for instance, his theory of vision, and the perpetual emanation of films from the surface of things, he makes no attempts to explain why this emanation takes place. Matter, according to him, tends to always fall, unless forced upwards by other

matter, or unless rebounding off it. If this be the only tendency of matter, it is clearly inexplicable why the surface of everything should be for ever flying off from it, at an incalculable velocity,—not downwards only, but upwards and sideways also.

Again, he seems often to have a momentary glimpse of laws, with which, as if by accident, he explains some single phenomenon, and then forgets and never again recurs to them. Thus he seems to have some notion that the velocity of falling bodies will be in some proportion to the distance they have to fall. It is in this way he explains the extreme heat of the mid-day sun. The films of the sun, he says, have so far to fall that when they reach us they strike us very forcibly. But of the property of bodies that this explanation really implies, he takes no further notice whatsoever.

Again, many of his explanations are actually no explanations at all. In his theory of vision, for instance, he makes no attempt of any kind to explain why the eyes are sensitive, and they alone, to the action of the visual films of things. In his account of the birth of the first human beings from the earth itself, he simply states a number of facts which, even had they been true, would have need of explanation themselves, just as much as the thing they purported to explain ; and again, there are a number of other cases in which he only becomes more definite by deserting altogether his own first principles, and supplanting them, for the time being, with those of the earlier physicists, and attributing to inanimate matter the qualities of a living organism. He thus, as an explanation of the

movements of some of the heavenly bodies, says that they possibly wander pasturing through the fields of heaven, each one seeking after its own proper food. And he thinks likewise that he has explained the appearance of vegetation on the earth's surface, by saying that it grew from it as hairs do from the skins of some animals, and feathers from the skins of others.

This is a subject that can only be touched on here in the briefest and most cursory way. That Lucretius did little to explain the actual truth of things is evident enough, without any comment at all. And enough has now been said to show that even had he possessed far better means for investigating the facts of nature, he would have been still unable to explain them, from his confused and limited notion of the ways in which that explanation was to be sought.

The aim of science is to simplify as far as possible the multiplicity of phenomena,—to trace in them the actions of common laws and principles, and thus to reduce the mystery of existence to a minimum, if not to do away with it altogether. And this Lucretius does not do. He states his principles clearly, and he continually employs them. But they are never really adequate; and there are also many cases in which he does not employ them at all; and many others in which, though they are employed, they are supplemented by him unconsciously by additional principles, with which he makes no attempt to bring them into any connection. And thus his whole sys-

tem, in the form he gave it, is utterly unsound and unstable ; and even though it could not be disproved from without, it would have the principles of its own confutation within.

Partly a cause and partly a result of this was the imperfect method which Lucretius for the most part followed. The method on which his conclusions rested was for the most part that of analogy, not of induction. These two methods are not opposed to each other, nor are they mutually exclusive. The first is properly the supplement of the second ; the second is the critic of the first. Analogy suggests explanations ; induction chooses between those suggested. To modern science this choice is all-important. Lucretius seems to think it comparatively immaterial. Modern science interrogates Nature with a view to showing how things *are* accomplished. The science of Lucretius interrogated Nature with a view to showing how things *might be* accomplished. And thus it is that such science as his was in its very nature not progressive, and could give men no additional mastery over matter.

Nor, indeed, did it even aim at doing so. The spirit that inspired it, and the spirit that inspires modern science, are different things. Knowledge, for its own sake, is the first thing desired by the latter. Knowledge, for the sake of discrediting supernatural agency, is the first thing desired by the former. So far as his mere analysis of matter goes, it is true that Lucretius employs a more accurate method of reasoning than that of mere analogy. He gives us there instances of genuine, if of somewhat crude, induction. But from that

point forward his main concern is to suggest the possible, rather than discern the actual. The skeleton of his argument is as follows : "We see a number of things happen day by day, which we all of us admit to be natural, and which we attribute to no divine agency. Every event that men say the gods accomplish, I can show, by strict analogy, is no more supernatural than these are, and is no jot more wonderful." Thus, when he says that thunder is often caused by the bursting of a cloud distent with wind, as a bladder bursts, his aim is not so much to show that such is the actual cause of thunder, as that thunder, whatever its cause, is really as homely a phenomenon as one of the most trivial events of life, that we all admit has nothing divine about it. This will account, too, for his fancying he has explained the action of lifeless matter, by comparing it to the action or the growth of an animal. The suppressed premiss is, the animal is not divine. It seeks its food, or its feathers grow, without the intervention of the gods. The aid of the gods is no more needful to explain why the stars roam through heaven, or why living things grow from the lifeless earth.

But great as are the differences between this science of Lucretius and that of modern times, we must not forget how much they have in common. His very method is but a part of the modern method, or rather it may be said that it is the modern method in its infancy. Both start with the same fundamental notion, that for the sum of things there may be found a natural explanation ; that everything is part of a

single order ; that this order is to be understood by observation, not by assumption ; that the only organs of observation are the senses ; and that the unknown, which the senses cannot reach directly, they can reach indirectly through the known that is immediately before them. Thus one of the most grotesque of the doctrines of Lucretius—that of the size of the sun, moon, and stars—is founded, as has been observed already, on an approach to the true method.

But not only in many places does he approach the true method, but in his more general views of things he all but arrives at what are now held to be the true conclusions. His general forecast of what the order of things must be is the same as that of our modern speculators. His scientific prescience is the same as theirs ; only he is like a Moses, who may merely see the promised land afar. He cannot go over Jordan and make it really his own, see what are the actual grapes that grow there, and enter into the cities walled up to heaven. He has planned a conquest, but he has not really made it.

How insecure his structure was, how easily injured by the very arguments by which it was supported—what a contrast it presents in this way to the structure of modern science—must be apparent to any one who examines it. There is hardly a detail in it that does not exemplify this. For instance, it will be remembered that he explains the phenomenon of reflection, by saying that images rebound from things that are *smooth and hard*. An antagonist might at once ask him how he accounted for the reflections

in water. He lays it down in speaking of the soul entering the body, that “whatever oozes in through another thing is dissolved, and therefore dies.” An antagonist might ask him how, were this true, images could pass through glass. Again, as to these same images, it might be asked of him how things so fine, as he conceives them to be, could carry air before them, as he says they do ; or how this air could pass, as on his principles it must, through transparent things, which are evidently air - proof. In another place he says that, “if the mind be immortal, it must have five senses. But there can be no senses apart from the body.” And yet he attributes to the mind one of the most important of all the senses—namely, sight. It sees, he says, just as the eyes do, only its vision is provoked by finer images. In his account of the voice, and the way in which we hear it, he says that a word as soon as it is uttered splits up into a number of words, and can thus be heard by a number of people at the same time. His own manner of reasoning might be used against him here. Words being material, cannot be infinitely divisible. If they split into any great number, they will become inaudible. But it may be said that when we hear a word, a number of such words enter our ears. Were that so, the more people there were within reach of a voice, the weaker to each one would that voice sound, as there would be fewer of these wandering words to enter the ears of each ; and thus, suppose a room were filled with a thousand people, each of these would hear worse than if it were only filled with a hundred

people. These are but a few instances out of many, of the way in which Lucretius can be confuted by his own reasoning.

But if we consider the general result of his teaching—his first principles and his last conclusions—if we consider these as he taught them, and not the ways by which he arrived at and supported them, we shall see that, as far as these go, his message to the world and that of modern science is practically identical. Human life, in both systems, is the same momentary phenomenon in the great and ever-changing evolution of things. It is the result of a power that knew not what it did in creating it. A little while it is, and again a little while it is not. It is but a bubble on the surface of the great flux of matter. It is an isolated thing, connected with no interests beyond itself. It is to be judged of and ordered with reference to itself solely. It is to be valued solely on account of its present resources, and all these resources are to be expressed in terms of conscious and of realised happiness. Lucretius says this as distinctly, and thought he could prove it as surely, as Professor Huxley or the Comte. In relation to human life then—in ~~a~~, that is, to the thing that alone gives any interest for us—the materialism of Lucretius and the materialism of our own day are in exactly the same position.

But this leads us on to the consideration of another and a deeper difference than any we have before been dwelling on. This is, that life itself is not the same thing for us as it was for Lucretius. Men's eyes have

been opened since his day, and they have become conscious of new difficulties ; they have had new experiences of which he knew little or nothing. Since he lived, religion and philosophy have transmuted the face of life, and have unfolded in human nature capacities that were before not bargained for.

To begin with what is commonly called philosophy, it can hardly fail to strike any one who is in the least acquainted with metaphysical speculation how strangely confused Lucretius is in his treatment of mind and matter ; how little he sees the difficulty of tracing the connection between the universe we are conscious of, and the mind that is conscious of it ; how little he sees what sensation really is ; how completely he confounds it with the external cause that produces it. To say that without a mind to conceive what we call the universe, no universe is conceivable,—to say that mind creates matter just as truly as matter creates mind,—is, to any one at all trained in exact thinking, a commonplace. But to the whole side of the question here indicated Lucretius seems an entire stranger. Many of our most eminent modern physicists are practically much in his case, it is true ; and remind us, to quote the words of one of themselves, “what drivellers even men of strenuous intellect may become, through exclusively dwelling and dealing with,” not, as this writer says, “theological chimeras,” but with the physical side of things merely, to the exclusion of the metaphysical. But they, though they practically lose sight of the other side of the question, yet theoretically acknowledge, for the most part, that the other side

exists; and is only not a subject for study, because it is so great a mystery that no study can unravel it. The following are the words of Professor Tyndall:—

“The passage from the physics of the brain to the corresponding facts of consciousness is unthinkable. Granted that a definite thought and a definite molecular action in the brain occur simultaneously; we do not possess the intellectual organ, nor apparently any rudiment of the organ, which would enable us to pass by a process of reasoning from the one to the other. They appear together, but we do not know why. Were our mind and senses so expanded as to see and feel the very molecules of the brain,—were we capable of following all their motions, all their groupings, all their electric discharges, if such there be; and were we intimately acquainted with the corresponding state of thought and feeling,—we should be as far as ever from the solution of the problem, ‘How are these physical processes connected with the facts of consciousness?’ The chasm between the two classes of phenomena would remain intellectually impassable.”

But of this difficulty Lucretius knows nothing. He does not see that two classes of phenomena exist at all, and how closely each is dependent upon the other. As a suggestive illustration of the gulf between his mind and the modern mind with regard to this question, we may compare his words with the words of a modern poet, where the two are contemplating the same event, and expressing it in almost the same language. A passage in which Lucretius speaks of the destruction of the existing universe has been already quoted, describing how one day it shall all crumble, melt, and utterly pass away, and leave no-

thing behind it but invisible atoms and deserted : Exactly the same thing has been said in words which we all know far better.

“ Like the baseless fabric of this vision,
The cloud-capt towers, the gorgeous palaces,
The solemn temples, the great globe itself,
Yea, all which it inherit, shall dissolve,
And, like this insubstantial pageant faded,
Leave not a rack behind. We are such stuff
As dreams are made of, and our little life
Is rounded with a sleep.”

But how differently do Lucretius and Shakespeare conceive of the same catastrophe that is predicted in the verse of both of them ! Lucretius simply means that the world which is made up of atoms will be one day shattered, and become atoms again ; it will, in short, be pulverised and reduced to the dust that it was made of. But Shakespeare means far more than this. To him the atoms and the dust are no more lasting than the universe that has been built, or that has built itself, out of them. They, too, are an insubstantial pageant likewise ; they, too, have no existence but in dreams—the dreams the stuff of which we ourselves are made of. The language of Shakespeare may not be strictly philosophical, but it expresses a meaning that is at the root of all philosophy ; it expresses a meaning which Lucretius seems to have had no glimpse of.

But not only is his position with regard to philosophy so different to what ours is ; his position with regard to the worth of life, and religion as connected

with^{*} life, is even more different. The crude and puerile theology with which he had to combat, it was easy enough to prove a useless factor in any theory of the conduct or existence of life. Starting with his empty space and atoms, as the raw material of everything, he could show easily enough that no such gods as the world, he knew, believed in, could be of any assistance in explaining how the universe was manufactured. But the God which modern science encounters, and whose aid it is endeavouring to dispense with, is a very different God from these; He is a God to whom time and space are nothing, and who is behind the atoms themselves, making them what they are, and being the one cause of their existence. The ways in which modern theists have expressed the connection of God with the world, and the creation of the world, have been very various both in form and meaning. But—to take as an instance such a phrase as this, “The universe is a thought of God,”—they one and all show us how different a thing is the theism we are calling in question now, to that which was called in question in the ancient world. And that theism has thus grown a profounder thing, shows us also how the world has grown more and more to see the profundity of the enigma of existence for which it has held theism to be the only solution.

The mere enigma of existence, however, is not the only one that now confronts us. We find ourselves perplexed by problems that are yet more importunate, and yet more difficult to deal with—problems not concerning the origin of the world, and of life and con-

sciousness, but with the use to be made of life and consciousness when originated. Men during the last two thousand years have been growing more and more conscious of a worth, a solemnity, and a purpose in human life. They have felt more and more that it must have some important end ; they have been troubled more and more with aspirations towards things they have named holy, and high, and sacred. They have become convinced that these are the things they ought to live for, and that life is something worse than worthless if they fail to do so. And all this inward consciousness has associated itself, and been absorbed into, their conception of God,—a God to whom they felt that they were rising, and who on his part was, they felt, condescending to them.

Whilst, however, the ideal of life has been thus growing, thus taking a grander and more august shape, and been catching brighter colours and a purer light, the actual facts of life have remained much the same. And thus the contrast between what ought to be and what is has grown more marked, more painful, and more perplexing, and men have come to be tortured with a new set of doubts and questions. Is the moral life only a dream ? If it be not—if it be the real end of man—how is it that it seems so few can attain to it ? If justice be the thing that in some moods we feel it to be, how is it that injustice seems everywhere to have the mastery ?

Germs of this view of life are doubtless to be traced in Lucretius ; but they were not distinct enough in his mind, or often enough present with him, to perplex his view of things, and his facile explanation of the

universe. How easily, for instance, and with what slipshod ingenuity, does he dispose of the problem of free-will! How little does he see how much, at least to some men's reason, may seem to hang on a denial of it! The contrast between his attitude and that of men in later ages, in the presence of the same facts, and trained in the same school of reasoning, is illustrated very forcibly by a comparison between him and the Persian philosopher-poet, Omar Khayyám, now so well known to English readers through the translation of Mr Fitzgerald. Omar, like Lucretius, was a materialist; and like Lucretius, by virtue of his materialism, was a disbeliever in all theology. But to Lucretius this disbelief was pure gain. For the Persian, it raises as many problems as it solves. Both say alike that there is no God, and no life hereafter. But Lucretius says this with an earnest and grave content. Omar says it with a fierce despair, and would reason and observation let him, he would gladly embrace the faith that he is thrusting from him; and this gives to his language a passionate bitterness that in Lucretius is quite wanting. The presence of a mindless uniformity everywhere, that takes no heed of man, and knows nothing of him, Lucretius contemplates with complacency. Omar discerns in such a spectacle food for another temper. He sees that not only is nature thus "rid of her haughty lords," which is all that Lucretius sees, but that the soul of man is rid also of its desire, and its comforter. He does not congratulate men upon this discovery; he commiserates them. There is no help anywhere,—this is what he says to them: there

is no help anywhere, and who will show us ~~any~~ good ?

“ And that inverted bowl they call the sky,
Whereunder crawling, cooped, we live and die,
 Lift not your hands to *It* for help—for *It*
As impotently rules as you or I.

With earth’s first clay they did the last man knead,
And there of the last harvest sowed the seed ;
 And the first morning of creation wrote
What the last dawn of reckoning shall read.

Yesterday *This* day’s madness did prepare,
To-morrow’s silence, triumph, or despair :
 Drink ! for you know not whence you come, nor why :
Drink ! for you know not why you go, nor where.”

And here again, when urging every argument he can think of to prove how self-contradictory is the very conception of a God, there is the same note of despair audible at the discovery that these contradictions exist :—

“ What ! out of senseless Nothing to provoke
A conscious Something, to resent the yoke
 Of unpermitted pleasure, under pain
Of everlasting penalties if broke !

What ! from his helpless creature be repaid,
Pure gold for what he lent us dross allayed—
 Sue for a debt we never did contract,
And cannot answer—oh, the sorry trade !

Oh Thou who didst with pitfall and with gin
Beset the road I was to wander in,
 Thou wilt not with predestined evil round
Emesh, and then impute my fall to sin !

‘Oh Thou who man of baser earth didst make,
‘And even with Paradise devise the snake,
 For all the sin wherewith the face of Man
Is blackened, Man’s forgiveness give—and take !’

And the same painful and unsatisfied cry,—the same confession that the burden of the problem of life, whether interpreted by faith or science, is a burden too great for him to bear,—bursts out in these verses with yet more distinctness :—

“Would but the desert of the fountain yield
One glimpse—if dimly, yet indeed revealed,
 To which the fainting traveller can spring,
As springs the trampled herbage of the field !

Would but some wingèd Angel, ere too late,
Arrest the yet unfolded roll of Fate,
 And make the stern recorder otherwise
Enregister, or quite obliterate !

Ah Love ! could you and I with Him conspire
To grasp this sorry scheme of things entire,
 Would we not shatter it to bits—and then
Remould it nearer to the heart’s desire !”

Of language like this there is scarcely a trace in Lucretius. Life, it is true, he looks upon as in many ways a gloomy thing. Even at its best he does not seem to set a high value on it. But were it freed from the evils which men themselves make for themselves, it would be, he thinks, a desirable possession, yielding us, while it lasted, a tranquil and sufficient pleasure, though not pleasure various or great enough to make us wish for its prolongation beyond its usual

term. At all events, however much he values it, or however little he values it, there is nothing in it to him of that painful mystery by which the heart of the modern world has been tortured, and before which the modern world is now standing with a fresh pang or amazement.

If, then, we would seek in Lucretius for any thoughts or considerations beyond those valued only by the student, the bookworm, and the critic, we shall find that they lie in this—in the way in which he brings home to us the advance which the world has made, not so much in the means for solving the riddle of things, as in the knowledge of how hard and how complicated the riddle is. We have, it is true, ampler means for discovering true answers; but the question grows before us far more rapidly than the answer does. Farther and farther, certainly and more certainly, are men pushing their conquests into regions that were once mysterious, and yet the mystery that has not been conquered remains more formidable than ever; or else, if we would fain have nothing of mystery at all, a choice confronts us more momentous than was ever offered to the ancient world. Either man's life is a mystery to be solved by no scientific method, a mystery which no scientific method so much as sheds a glimmer of light on,—either there is an order of things which the proofs and verifications of the physicists cannot touch, or even go near to, things supernatural, supersensual, and essentially unmortal, whose ways are not the ways of matter, nor the laws of matter its laws; and if this be so, in this region is

to be sought by faith a reconciliation of all the contradictions that torment us: or else, if all this be untrue, then there are really in things no contradictions at all, except those of our own making. Man's moral and spiritual life is a dream. Justice is nothing but a name. It is not a power, and there is no reason why we should look for its supremacy. Men are nothing but machines,—forces of nature, by some means or other become self-conscious; but their lives are without any significance whatsoever. They are but a brief series of so many sensations of pleasure and of pain. If we give life so little meaning as this, we shall of course have less to do to explain it. And yet even if we look upon it in this way, we shall, as has been said before, not have explained it. The perplexity, however, which besets the modern world, is not the inability to explain *how* physical processes are related to the facts of consciousness, as to determine what, if that relation be what many think it is, the facts of consciousness may be worth, and if they have any significance at all beyond themselves.

On the whole, if we compare the state of men's minds now with the state of men's minds as exemplified by Lucretius, it will be hard to say that we have arrived at a clearer or more satisfactory view of things. We have grown wiser, it is true; but we have (so far as mere human intellect goes) grown wiser only by having come to recognise what a very short way our greatest wisdom carries us. Modern science, as a matter of fact, leaves us in greater perplexity than did ancient science. In some ways it may simplify the

mystery of things. But it concentrates this mystery as well as simplifies it. It may reduce it into a smaller compass, but it leaves it more impenetrable. Faith, and the various theologies in which faith embodies itself, offer to cut the knot. Science can only satisfy us by assuring us that, as far as our moral life goes, there is no knot to cut. Philosophy again steps in, and claims that science depends on it, and can have no certainty that is not derived from it.

And now on all sides we see faith failing, philosophies in conflict, and science, though its superstructure is daily growing, feeling its foundations becoming more and more insecure. And amongst the most thoughtful minds, who cannot accept faith as the guide of life, and who yet feel that reason alone will not take the place of it, we find traces theoretically, if not practically, of a despondent scepticism. Let us do our best, they say, and live by what light we have. But these lights are very feeble, and their strongest rays are lost in the gloom beyond us.

“We are such stuff
As dreams are made of, and our little life
Is rounded with a sleep.”



